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REPOWER - KOSOVO

CONTRACT NO. AID – 167-TO-14-00007
Task Order AID-OAA-I-13-00012

FINANCING OPTIONS FOR REHABILITATION OF THERMAL POWER PLANT “KOSOVO B”

JANUARY 2016

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List of Abbreviations

AEAI	AEAI- Advanced Engineering Associates International, Inc.
BOT	Build-Own-Transfer
BOO	Build-Own-Operate
CO ₂	Carbon dioxide
EBRD	European Bank for Reconstruction and Development
ECA	Export Credit Agency
EPC	Engineering, Procurement, Construction
EU	European Union
ERO	Energy Regulatory Office
FGD	Flue Gas Desulfurization
FIDIC	International Federation of Consulting Engineers
GoK	Government of Kosovo
GWh	Gigawatt hours
IBRD	International Bank for Reconstruction and Development
IFI	International Financial Institution
IED	Industrial Emissions Directive
IPP	Independent Power Project
KESCO	Kosovo Electricity Supply Company J.S.C.
KEDS	Kosovo Energy Distribution Services J.S.C.
KEK	Kosovo Energy Corporation J.S.C
KOSTT	Kosovo Transmission System, and Market Operator J.S.C.
KRPP	Kosovo e Re Power Plant (in this document mostly referred as the New Kosovo Power Plant ('NKPP'))
kJ/kg	kilojoules per kilogram
LCPD	Large Combustion Plants Directive
MF	Ministry of Finance
MED	Ministry of Economic Development.
MIGA	Multilateral Investment Guarantee Agency
MWh	Megawatt hour
MW	Megawatt
NGO	Non-Governmental Organization
NKPP	New Kosovo Power Plant

NO _x	Nitrogen oxides
O&M	Operations and Maintenance
PPA	Power Purchase Agreement
PA	The International Business Development business of PA Consulting Group of London
PIU	Project Implementation Unit
PPP	Public-Private Partnership
PRG	Partial Risk Guarantee
ROT	Rehabilitate-Operate-Transfer
ROO	Rehabilitate-Own-Operate
RfP	Request for Proposal
SBA	Stand-By Arrangement
SCR	Selective Catalytic Reduction
SFDCC	Kosovo Strategic Framework for Development and Climate Change
SPV	Special Purpose Vehicle
SRD	Special Drawing Right (IMF)
SO ₂	Sulfur dioxide
TA	Transaction Advisors
TPP	Thermal power plant
TOR	Terms of reference
TEAS	Turkey Electricity Production-Transmission Company
Termokos	Prishtina District Heating Company
WB	World Bank

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Executive Summary

Thermal power plant Kosovo B ('Kosovo B') is a critical asset for the generation of electricity both today and in the medium term future. The plant currently produces around two-thirds of all the energy produced in Kosovo; it is also recognized as the most important and cost effective option¹ necessary for increasing security of supply in Kosovo in the near to mid-term, as concluded by a 2013 study by Vattenfall². Over the past few years, over €56m has been invested in Kosovo B and in the mines, resulting in enhanced operational reliability, efficiency and output. However, if Kosovo B is to continue operations until 2030 or 2040, it is necessary that the power plant undergoes major rehabilitation with significant new investment requirements. It is of particular importance that these investments bring the plant up to current EU environmental standards, without which the plant must be closed, or its running restricted.

Although some of the assumptions made for the Vattenfall study have now been overtaken by events (in particular, the delay to the New Kosovo Power Plant (NKPP)), the study's overall conclusion remains valid. The electricity supply and demand balance have been analyzed over the period up to 2030 under a variety of scenarios to 'stress test' not only how the system will meet demand, but to identify the years of maximum exposure to supply insecurity. In performing such analysis, clearly the assumptions made about levels of generation availability from other sources are critical. However, at the time of writing this report, it is clear that NKPP cannot come on stream before 2023, although it is now planned to have a different capacity than assumed in the Vattenfall study. Forecasts of other generation are also uncertain, as renewable energy targets do not seem likely to be met. European legislation will not allow Kosovo A to continue its present operating regime; but more crucially, the plant's current age and condition make it entirely possible that it will suffer a major failure in the short term. The full scenarios are described and compared in Appendix 1 to this report, but the most realistic view is shown below. This confirms that Kosovo B's rehabilitation should remain a key element of the Government's short to medium term energy strategy.

The main findings from the simple stress test are shown in the following table³.

	Scenario 1	Scenario 2	Scenario 3
Kosovo A running	To end 2022	To end 2022	To end 2022
NKPP	+500MW from 2023	+500MW from 2023	+500MW from 2023
Kosovo B rehabilitation	B1 2018 B2 2019	Not done +20,000 hours 2018-2024	Not done +20,000 hours 2018-2024

¹ But not in itself sufficient: Kosovo will require substantially more base load capacity than Kosovo B to ensure security of supply.

² All scenarios from the Vattenfall study include Kosovo B operating in 2030.

³ More detailed stress test can be found in Appendix 1 – Position of Kosovo B in the Kosovo Electricity Market

RES installation	Realistic	Over-optimistic	Realistic
Stress test results	Kosovo as net exporter	Kosovo imports between 10-20% of electricity from 2023	Kosovo imports between 35-40% of electricity from 2023
Import/ export balance			

Current predictions of the installation and energy produced from new renewables installed look rather unrealistic, which can be in short explained with the following two examples:

- i. For 2016 it is planned to have an additional 609 GWh of energy produced from new hydro-electric power plants (for comparison, existing hydro-electric power plants produced around 150 GWh in 2014, which would mean around 232 MW of installed power in 2016 in comparison of around 43 MW installed today)
- ii. Regarding wind-farms and solar power plants, although today there is almost zero of installed capacities and energy produced, in 2016 it is planned to have around 82 MW of wind and 10 MW of solar

Such overoptimistic planning can endanger the future of thermal power plants, because it gives impression that the security of supply can be achieved with a high percentage of electricity produced from RES. It should also be noted that RES generation facilities generally operate on an intermittent basis, and cannot provide the base-load electricity needed to reliably meet customer demand.

For purposes of more realistic planning, lower expectations regarding installation of RES are put in the realistic stress test scenarios. In such scenarios, situations with and without Kosovo B are taken into consideration. The main findings from such scenarios show that Kosovo B is the critical generation facility for the Kosovo electricity system. In such scenarios, in the case when Kosovo B is not rehabilitated, Kosovo is importing around 40% of electricity by 2030.

It is also to be noted that in the case of the 'do nothing option': not building NKPP, not rehabilitating Kosovo B nor Kosovo A, Kosovo would be importing almost all its electricity.

The case of Kosovo B rehabilitation does represent one of the key factors for the security of supply in Kosovo. The rehabilitation will ensure reliable plant operations, increase its availability and extend its lifetime, while meeting all current environmental requirements.

The timing of the rehabilitation, however, needs to be selected in relation to the availability of other plants, in order to minimize the risk that the worst case scenario occurs, i.e. the situation where Kosovo A is decommissioned, NKPP is not built, and Kosovo B needs to go offline to undergo major overhauls or rehabilitation works, leaving Kosovo critically dependent on imports to meet demand.

Since two blocks are being rehabilitated, the timing or indeed phasing of the rehabilitation in the context of minimizing the loss in supply during the rehabilitation should be taken into account as an absolute priority during the transaction process

Despite a study undertaken in 2010⁴, the actual rehabilitation works required for Kosovo B station cannot be identified with sufficient precision for transaction purposes at present, although the study provides a working indication of cost. However, a new feasibility study of the environmental and other measures needed for Kosovo B is to be financed by the EU and is at the contracting phase. The findings will be an essential input for going forward with the rehabilitation of Kosovo B. Apparently these findings are not due to be available before the end of 2016. To build investor confidence in the reliability of its results, it is assumed that the EC feasibility study will be carried out, and the report signed, by an internationally recognized and credible company.

In addressing the Kosovo B rehabilitation project, Government must balance a number of potentially conflicting objectives. This will be challenging. Whichever approach is selected for financing the project, the support of experienced transaction advisors should be able to support Government in identifying strategies to limit any adverse side-effects of this balancing. Ultimately, however, the decisions will be for Government to make.

The range of objectives is illustrated in the diagram overleaf.

The options for the financing the rehabilitation of Kosovo B must be assessed in the light of these objectives.

In carrying out the rehabilitation, availability of capital will be a crucial issue. This Report evaluates the two principal options for financing rehabilitation of Kosovo B to support the Kosovo Government as the decision maker for the future rehabilitation. On the one hand, a strategic partner can be sought who will secure the necessary financing, undertake the works and then operate the plant going forward; on the other hand, Government can endeavor to secure funding itself for the works, which may be carried out by an EPC contractor, but under the management of KEK.

⁴ The “*Kosovo B Investment Requirements and Rehabilitation Feasibility Study*” (2010) was prepared by Tetra Tech ENE through USAID in order to determine the rehabilitation and modernization works required to extend the life of the plant and to upgrade the Kosovo B plants to reach the EU ELV (Emissions Limit Values).

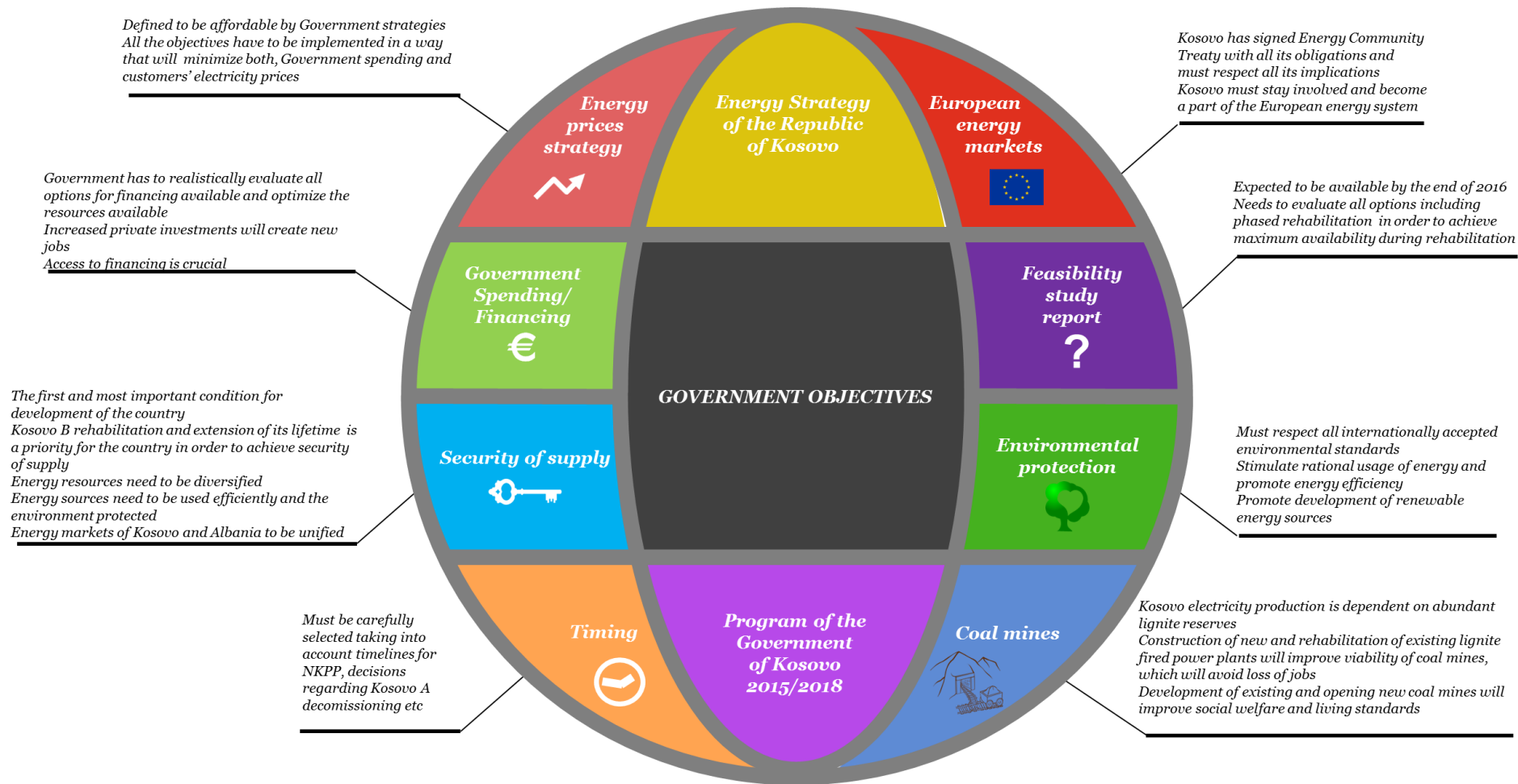


Figure 1 – Drivers and Challenges for the Government of Kosovo

Option 1 – Project Financing

Under a 'Project financing option' a strategic partner is identified who would then be responsible for securing financing for the project. This means that this option would represent a type of a Public-private Partnership ('PPP'), and the power plant would be rehabilitated on a rehabilitate-operate-transfer ('ROT') or rehabilitate-own-operate ('ROO') basis⁵. Regarding the ownership structure, Government of Kosovo could choose whether it wants to stay as the partial owner of the rehabilitated power plant, or not. There are benefits in a long-term approach, however. Where the strategic partner will be the operator long-term, his interests in the rehabilitation works become aligned with those of Government: both have a strong interest in the quality of the works, not simply in their completion date or cost.

Under this option, Kosovo B is unbundled from KEK into a new, separate legal entity (known as a special purpose vehicle or 'SPV'); the Kosovo B assets and liabilities are transferred to the SPV. Once done, Government of Kosovo would seek a strategic partner to carry out the rehabilitation works.

The obligation of the strategic partner would be to rehabilitate Kosovo B according to the selected and pre-defined technical solution in order to fulfill security of supply objectives. The activities of the strategic partner would comprise the obligations to bring capital, enter into an 'EPC' contract for the rehabilitation works and undertake ongoing operations and maintenance ('O&M') of the plant during and after the rehabilitation works, either directly, or by engaging an O&M subcontractor.

The obligation of Government would be to facilitate the provision of a long term agreement for the offtake of electricity⁶ with KESCO, and ensure the provision a long term lignite supply agreement. It is important to recall the provisions of the Implementation Agreement entered into with KESCO's owners, as these set out the basis on which the private company will be prepared to contract to purchase the Kosovo B output. Most likely the whole transaction will need to be backed up with government guarantees and political risk insurance, such as e.g. Multilateral Investment Guarantee Agency (MIGA) guarantee, in order to raise investor confidence.

The strategic partner would be selected through an international competitive tender with the obligation of the strategic partner to rehabilitate Kosovo B, on a ROT or ROO basis.

The main advantages of the project financing option are that the EPC and O&M risks would be transferred to a larger and more experienced company that would be able to better manage them. The project would be financed off-balance sheet for the country, minimizing Government spending. However, in case of Government

⁵ 'Under ROT, the investor carries out the works, then operates the plant on behalf of GoK (owner) for a specified period of time, and then transfers operating control back to the Government once specific conditions are met. By contrast, under ROO, the investor continues as both owner and operator of the plant into the longer term.'

⁶ Such agreements for the purchase, sale of capacity and/or energy and the delivery of energy of may have different names: agreements for the purchase or sale of power or energy, for offtake or bulk supply. In this report the term 'power purchase agreement'(PPA) is used in a generic sense as being the one most familiar in Kosovo.

guarantees being issued, the total debt-carrying capacity of the Government would anyway be decreased by the amount of guarantees.

The main disadvantage of this option is of being unable to find a strategic partner or close the deal, after a long-lasting and expensive procedure that is required for such transaction, or of losing the interest of potential bidders through delay or uncertainty in the process, as has happened previously with the NKPP project. All financial and contractual arrangements would have to be in place at or before financial close⁷, the allocation of risks negotiated and allocated accordingly, and price and conditions fixed that are satisfactory for both sides. One aspect that would have strong impact on the transaction cost is the fact that it would be difficult to transfer the risk of costs of rehabilitation overruns to a reputable engineering company, and may be achievable only with huge contingencies.

The option of project financing, due to the above reasons, offers less flexibility regarding the timing of the rehabilitation; the development phase is also longer, as the entire contractual suite necessary for the transaction, including those elements needed once the rehabilitations works are done, must be in place *prior* to signature. There is therefore a timing issue here as regards the overriding objective of security of supply.

Another issue is the price of preparing the bid. This is estimated to be as high as €5-8m because the bidder will need to do substantial due diligence in order to ensure his bid appropriately protects his financial position and allocates risk between himself and any proposed subcontractor, including the EPC subcontractor. Potential investors may be hesitant to commit the significant human and financial resources necessary for due diligence and bid preparation, unless they consider that there is a reasonable chance of concluding a successful transaction. Kosovo's track record on energy transactions will be significant here.

Since the transaction is more complex than option 2, there is a higher chance of failure, so it will be crucial to have competition between potential investors. The example of the NKPP shows that even for the construction of a new power plant, which carries less risk (MIGA guarantee, more predictable contingency reserve and lower risk of cost overruns, etc.), getting competition between the potential investors is a demanding task.

Option 2 – Corporate Financing

Under this option, the financing is obtained by a Government-owned company, backed up by the government guarantees, rather than by a strategic partner. That company would be responsible for the future rehabilitation and O&M of the Kosovo B power plant, albeit typically the company would contract directly with an EPC contract. This itself presents a risk. By contrast with the project financing option, there is no strategic partner to manage the EPC contractor, and so under corporate financing an important issue for consideration is KEK's ability to manage the EPC contractor effectively. KEK is unlikely at present to have in-house the resources,

⁷ 'Financial close' occurs when all the project and financing agreements have been signed and all the required conditions contained in them have been met.

skills and experience to manage a very experienced EPC contractor whose interests will not be aligned with those of KEK. A common practice in such a situation for companies such as KEK is to appoint an 'employer's engineer' who is experienced in the management of such a contract and in carrying out the approval, decision making and a adjudication role that is essential under EPC arrangements. This is foreseen in the FIDIC suite of contracts which is likely to be the model for the EPC contracts. KEK – or rather, legally, the SPV - would therefore subcontract with a reputable engineering company that would define all the required works and prepare comprehensive tender documents.

Regarding ownership of the assets, the assets can remain in the ownership of the country, or they could be transferred to the company, owned by the government, that will be responsible of the future rehabilitation and operation and maintenance.

Operations and maintenance could be done by the company, or outsourced to a reputable engineering company or utility under a concession or operations contract. A decision is therefore required regarding the company that will be responsible for the future rehabilitation and O&M of the Kosovo B power plant. This could be KEK, or a newly created SPV ('Kosovo B Company') that would most likely be unbundled from KEK. It is possible, at any point, to introduce an O&M contractor, if this seems advantageous. However, here, unlike the project financing option, the interests of the contractor are not aligned with those of the owner – Government/KEK. Even where a concession rather than a simple management contract⁸ is awarded for O&M, it will have an end-date; the contractor will be planning for his exit from commencement, and this may affect his performance running the plant particularly during the last five years. Wherever interests diverge, there is an increased risk of dispute.

Under the corporate financing option, the company that will be operating the power plant needs to define and agree with the government a comprehensive schedule of the required works to be undertaken, agree on the structure of the contract and prepare tender documents to contract with an EPC contractor for the rehabilitation works.

An equity contribution would be provided to the company by the Government of Kosovo, while the Government would also provide government guarantees to support the debt that would be raised by the company. However, in the case of Kosovo it is most likely that this arrangement would have to be backed up by political risk insurance, such as e.g. MIGA guarantee, in order to raise credit worthiness.

The Government and KEK as state owned company are then free to decide on the offtake arrangements; however it is most likely that KESCO will be the buyer and it would require transparency of price for its energy purchases. The same conditions apply to the signature by KESCO of the offtake agreements as under the previous option, but here there is the potential for time-consuming disagreements because there is arguably less competition involved in the process, which is a pre-condition of KESCO's willingness to contract, and of the regulator's willingness to accept a pass-through of the contract price to customers.

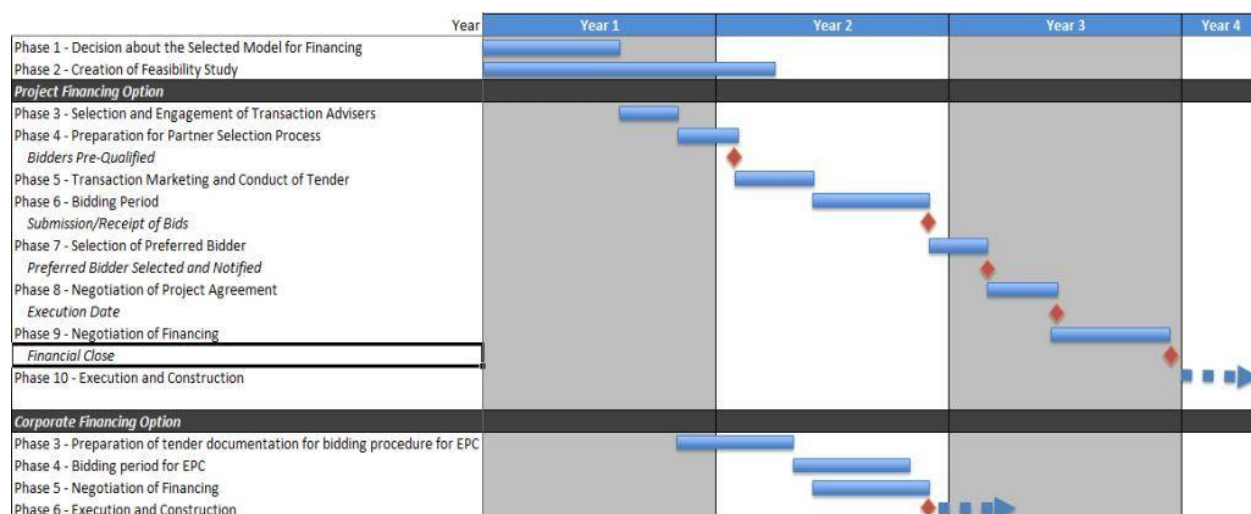
⁸ Under a concession agreement, the contractor is normally expected to make investments in the business, whereas under a management contract he is simply paid a fee for operations. In neither case do they have a vested interest in the long-term health of the business, unless the contract is of a duration (such as 99 years) which is unusual in Europe.

Similarly although Government would have freedom over the structure of the lignite supply arrangements under this option, it is likely that a formal agreement between KEK (Kosovo B Company) and KEK (Mine) would be desirable for price transparency.

The two options are summarized and then compared in the following table.

Issue	Project Financing	Corporate financing	Comment
Financing / Government spending	In theory financed off-balance sheet (but since government guarantees will most likely be needed, this benefit is more apparent than real), but no need for equity contribution in cash	Ties up capital (Government support is needed in providing guarantees and equity)	Project financing option may be more acceptable for the Government of Kosovo, but is a more difficult option to deliver successfully, as history has shown with NKPP
Timing	More difficult to plan because a long time is needed for the negotiations with the strategic partners; but there is a powerful imperative to conclude a deal, then act on it	Easier to plan and shorter time to market	Corporate financing offers more flexibility regarding planned timing
Chances of failure	Higher, since it depends on the strategic partner as well	Lower; if it stalls, there is no strategic partner to walk away leaving Government without a transaction process	Corporate financing has less chance of failure
Risk of dispute	The interests of the strategic partner are aligned with those of Government, reducing risk of dispute; (but KESCO's are <i>not</i> and this is a risk)	The turnkey contract underpins a relationship where the parties have different interests, and so they are prone to dispute (but equally, there are standard techniques for mitigation)	Disputes are a risk in both circumstances, but may arise in different ways. Experienced transaction advisors will assist GoK in identifying appropriate mitigation measures
Lignite supply / O&M etc agreements	Very important, and would have to be negotiated upfront	Very important, but do not necessarily have to be planned or negotiated upfront	Corporate financing offers more flexibility regarding timing since both the parties are government owned, but inexperience may increase the risk of poor or delayed commercial contracts
Cost overruns	Highly likely, but the experienced strategic investor will offer more realistic planning	Very high probability since governments are not usually experienced in managing complex projects	Project financing with the strategic partner offers less risk of the unplanned cost overruns, since an experienced strategic partner will expect rigorous planning and implementation

As shown above, the timing of the rehabilitation is one of the most important issues to be addressed. The following figure compares the timeline in each of the two options.



It can be seen that the corporate finance option is easier and quicker to bring to a conclusion. If timing is the most important consideration for Government, this would indicate that this second option is the most advantageous. In considering timing, it is important to remember that a failed transaction is expensive. While project financing can in theory be followed by the corporate financing approach, scarce financial resources will have been used up and the Government's credibility potentially undermined.

There are other advantages for Government in taking the corporate financing approach: it is less complex, and more flexible. If there are delays or changed decisions, the process is less likely to be derailed – there is no strategic partner who may become frustrated or concerned by an imperfectly managed process. The two key factors in making the appropriate decision are:

- ❖ timing – would either option deliver the project sufficiently early to support energy consumption in Kosovo during the next seven years when security of supply is most critical? And
- ❖ access to capital and the ability to carry additional debt – in both cases access is problematic;

Realistically Kosovo's ability to carry additional debt (and the consequences of that for other calls on sectors such as health, education etc.) may be the deciding factor. In addition, the Government has recently expressed its reluctance to take on additional debt.

If that is so, the project financing may be the only feasible option available to Government, notwithstanding the higher risk involved in execution. In the event that Government does confirm its decision to proceed with the rehabilitation project, and select the project financing option, REPOWER is available to support Government in thoroughly preparing the project, identifying detailed timelines and supporting the subsequent decisions which will be required, including the appointment of an experienced transaction advisor.

1. Introduction

The Government of Kosovo's key objectives regarding Kosovo B rehabilitation may be summarized in the following statements:

- ❖ Security of electricity supply is the first and the most important condition necessary for the development of the country;
- ❖ Thermal power plant Kosovo B ('Kosovo B'), as the most important generation facility of Kosovo for the security of supply issues, needs to undergo rehabilitation with the significant investments in order to ensure its functioning until 2030 or 2040 (although it is noted however that this is an essential condition but alone does not satisfy the security of supply requirements);
- ❖ Timing of the rehabilitation of Kosovo B must be carefully selected taking into account duration of unit downtime and the status of Thermal Power Plant Kosovo A ('Kosovo A') and New Kosovo Power Plant ('NKPP');
- ❖ Additionally, rehabilitation of Kosovo B in line with EU environmental standards will help secure the long term viability of the coal mines, and helping to secure jobs long term;
- ❖ Kosovo must stay involved and become a part of the European energy system, and since Kosovo has signed the Energy Community Treaty, all the implications of the Treaty must be respected;

All these objectives have to be implemented in a way that will be realistically viable that will at the same time minimize both Government spending and customers' electricity costs.

Previous studies, such as the *"Study about Security of Electricity Supply in Kosovo"* prepared by Vattenfall Europe PowerConsult GmbH⁹ have concluded that the rehabilitation of Kosovo B offers the least cost option for securing a significant part of the country's generation requirements. This view has been adopted in the Energy Strategy of the Republic of Kosovo (both the current one and the latest proposed update).

Although some of the assumptions made for the Vattenfall study have now been overtaken by events (in particular, the delay to the New Kosovo Power Plant (NKPP)), the study's overall conclusion remains valid. We have analysed the electricity supply and demand balance over the period up to 2030 under a variety of scenarios to 'stress test' not only how the system will meet demand, but to identify the years of maximum exposure to supply insecurity. In performing such analysis, clearly the assumptions made about levels of generation availability from other sources are critical. However, at the time of writing this report, it is clear that NKPP cannot come on stream before 2023, although it is now planned to have a higher capacity than assumed in the Vattenfall study. Forecasts of other generation are also uncertain, as renewable energy targets do not seem likely to be met. European legislation will not allow Kosovo A to continue its present operating regime; but more crucially, the plant's current age and condition make it entirely possible that it will suffer a major failure in the short term. The full scenarios are described and compared in Appendix 1 to this report, but our most realistic view is shown below.

⁹ A summary of the main findings of this and other reports on the Kosovo power sector is contain in Appendix 1.

This confirms that Kosovo B's rehabilitation should remain a key element of the Government's short to medium term energy strategy.

The main findings from the simple stress test are shown in the following table.

	Scenario 1	Scenario 2	Scenario 3
Kosovo A running	To end 2022	To end 2022	To end 2022
NKPP	+500MW from 2023	+500MW from 2023	+500MW from 2023
Kosovo B rehabilitation	B1 2018 B2 2019	Not done +20,000 hours 2018-2024	Not done +20,000 hours 2018-2024
RES installation	Realistic	Over-optimistic	Realistic
Stress test results	Kosovo as net exporter	Kosovo imports between 10-20% of electricity from 2023	Kosovo imports between 35-40% of electricity from 2023
Import/ export balance			

Table 1 – Stress Test

Current predictions of the installation and energy produced from new renewables installed are extremely unrealistic, which can be in short explained with the following two examples:

- i. For 2016 it is planned to have an additional 609 GWh of energy produced from new hydro-electric power plants (for comparison, existing hydro-electric power plants produced around 150 GWh in 2014, which would mean around 232 MW of installed power in 2016 in comparison of around 43 MW installed today)
- ii. Regarding wind-farms and solar power plants, although today there is almost zero of installed capacities and energy produced, in 2016 it is planned to have around 82 MW of wind and 10 MW of solar

Such overoptimistic planning can endanger the future of thermal power plants, because it gives impression that the security of supply can be achieved with a high percentage of electricity produced from RES. It should also be noted that RES generation facilities generally operate on an intermittent basis, and cannot provide the base-load electricity needed to reliably meet customer demand.

For purposes of more realistic planning, lower expectations regarding installation of RES are put in the realistic stress test scenarios. In such scenarios, situations with and without Kosovo B are taken into consideration. The main findings from such scenarios show that Kosovo B is the critical generation facility for the Kosovo Energy system. In such scenarios, in the case when Kosovo B is not rehabilitated, Kosovo is importing around 40% of electricity by 2030.

It is also to be noted that in the case of the 'do nothing option': not building NKPP, not rehabilitating Kosovo B nor Kosovo A, Kosovo would be importing almost all its electricity.

The case of Kosovo B rehabilitation does represent one of the key factors for the security of supply in Kosovo. The rehabilitation will ensure reliable plant operations, increase its availability and extend its lifetime, while meeting all current environmental requirements.

The timing of the rehabilitation, however, needs to be selected in relation to the availability of other plants, in order to minimize the risk that the worst case scenario occurs, i.e. the situation where Kosovo A is decommissioned, NKPP is not built, and Kosovo B needs to go offline to undergo major overhauls or rehabilitation works, leaving Kosovo critically dependent on imports to meet demand.

Since Kosovo B power plant is a key asset for security of supply, the timing of the rehabilitation has to be planned in relation to the progress of other possible projects. Such projects include the NKPP for which a preferred bidder has just (November 2015) been announced, and Kosovo A station which is currently scheduled for decommissioning at the end of 2017. The planning must also take into account the contingency of failure of the NKPP transaction and of the Kosovo A station due to major breakdown.

The condition of Kosovo A indicates that the rehabilitation works for Kosovo B should go forward as quickly as possible to safeguard security of supply. Therefore a decision on the strategy for financing the rehabilitation of Kosovo B must be made at an early date.

Notwithstanding this imperative from the Kosovo side, whether Kosovo B represents an attractive investment proposition for private investors needs to be considered in the context of the current and future electricity markets, both locally and within the region.

The purpose of this Financing Options Report is threefold:

- to outline the principal models available for private sector participation in the Kosovo B rehabilitation project;
- to put the options for financing available into a project specific context, summarizing all the issues, pros and cons for each different option;
- to help Government make an informed decision on the financing structure for Kosovo B rehabilitation.

The rest of this Report is structured as follows:

Section 2 – identifies the key drivers and challenges of the strategic decisions on financing

Section 3 – compares and contrasts the two principal options for financing

Section 4 – highlights the timeline of each option; and

Section 5 – draws conclusions and identifies the decisions to be taken.

In the interests of brevity, background information on the Kosovo power system is included in Appendix 3 rather than in the main body of this report. In addition, we have also produced a companion report, 'Market Potentials and Challenges'. This second report is informative in purpose; it focuses on the rehabilitation project from the perspective of the strategic investor (if indeed this option is selected), rather than of government, and aims to provide those unfamiliar with the previous energy transactions, such as new PIU officers, with a better understanding of the project risks as they will be perceived by the market.

2. The Strategic Decision: Drivers and Challenges

In this chapter, we identify the key drivers of the strategic decision to rehabilitate Kosovo B. We then consider the principal challenges facing Government – that of financing the project, and the timing of the rehabilitation project which is driven by security of supply considerations, as well as some of the issues of lesser, but still significant, importance.

2.1. Drivers

There are eight main drivers, reflected in the two principal Government programs¹⁰; these are illustrated in the diagram on page [x] of the Executive Summary of this report.

Security of Supply

Security of supply is the first and most important condition for development of the country.

Kosovo is a small market with only two generating facilities, Kosovo A and Kosovo B, both owned by the KEK company, 100% in the ownership of the Kosovo Government, producing around 97% of the total electricity produced in Kosovo. Kosovo B rehabilitation and the extension of its lifetime is a priority for the country in order to achieve a security of supply.

In all future scenarios of the development of the energy sector in Kosovo, Kosovo B plays an extremely important role.

Besides using the most obvious resource - abundant lignite reserves - the country strategy aims for the diversification of energy resources, and the effective management and environmentally sustainable use of existing energy resources.

Another action that will improve security of supply in Kosovo is the currently ongoing process of unifying energy markets of Kosovo and Albania.

Government Spending/Financing

It is recognized in Government's strategic documents that the increase of private investments, such as rehabilitation of Kosovo B, will help in creation of new jobs, and the retention of existing ones. However, access to financing represents a crucial factor. The realization of the Kosovo B rehabilitation project represents a significant challenge, especially due to the uncertainty over the future structure of the electricity sector, and exacerbated by environmental issues, political risks, and Kosovo's limited access to capital.

Therefore, Government has to realistically evaluate all options for financing available and optimize the resources available, and strike a balance between maximizing returns from a potential privatization, and trying to minimize sectoral costs.

¹⁰ The Energy Strategy of the Republic of Kosovo which, according to the Law on Energy, is supposed to be revised every three years (however, the last Energy Strategy adopted was the one covering 2009-2018, while a new Energy Strategy covering the period 2013-2022 has not been adopted yet by the Kosovo Assembly), and the "Program of the Government of Kosovo 2015/2018" http://www.kryeministri-ks.net/repository/docs/Government_Programme_2015-2018_eng_10_mars.pdf

Energy Prices Strategy

In the strategy documents, the Government has declared that energy prices need to be affordable to citizens and businesses.

All the objectives have to be implemented in a way that will be realistically viable: that not only minimize Government spending but also minimize the increases in the cost of electricity to customers that must necessarily result from increased investment in the sector.

European Energy Market

Kosovo has signed the Energy Community Treaty with all its obligations under the Third Energy Package which also includes the competition acquis (and its State Aid restrictions); Kosovo must therefore comply with EU requirements and respect all its obligations. Kosovo has committed to stay involved in European trends and become a part of the European energy market.

The Kosovo energy market is a small market which has gone a long way to achieving goals set by the Energy Community Treaty, first of all by setting up a compatible legal framework as a prerequisite to achieve goals from the treaty. In particular, such legal framework is designed to ensure the transparency, predictability and security necessary to promote the entry of potential investors into the energy sector.

Feasibility Study Report Findings

Despite a study undertaken in 2010, the actual rehabilitation works required for Kosovo B station cannot be identified with sufficient precision at present. However, a new feasibility study for Kosovo B is to be financed by the EU and is now at the contracting phase. The findings will be an essential input for going forward with the rehabilitation of Kosovo B. We understand that these findings are not due to be available before the end of 2016.

To build investor confidence in the reliability of its results, it is essential that the EC feasibility study is carried out, and the report signed, by an internationally recognized and credible company.

The study needs to evaluate all options, including the rehabilitation in phases, in order to achieve maximum availability during rehabilitation.

Environmental Protection

A further driver is environmental protection, which is behind the nature of the proposed rehabilitation. There are a number of examples of the changing trend regarding availability of debt for financing coal-fired power plants, including EBRD and World Bank Energy Sector Strategies. All lenders - national, supra-national and commercial - adhere to strict environmental guidelines, including the generally accepted World Bank (including IFC) standards¹¹. These Standards are reflected in the Equator Principles adopted by commercial banks for determining, assessing and managing environmental and social risk in projects by providing a minimum standard for due diligence to support environmentally and socially responsible risk decision-

¹¹ This trend is discussed further in the companion REPOWER-Kosovo report, *'Market Potentials and Challenges'*

making. These set the new environmental standards for cleaner energy production and include evaluating the environmental implications of investment in coal-fired generation and its associated infrastructure. As a consequence, Banks will approve lending on coal-based investments only in 'rare and exceptional' circumstances.

When building the case of Kosovo B rehabilitation, the team in charge for the preparation will have to respect all internationally accepted environmental standards, and at the same time stimulate rational usage of energy, mine lignite resources in an environmentally sustainable manner, promote energy efficiency, promote the development of renewable energy sources and introduction of new technologies that do not cause irreparable damage to the environment, thus respecting the application of internationally accepted environmental standards.

Coal Mines

Kosovo electricity production is dependent on the most obvious resource, abundant and relatively high quality lignite reserves.

The rehabilitation of Kosovo B, as well as construction of new lignite fired power plants will have an impact on the viability of the coal mines, which will sustain employment. The development and exploitation of existing and opening new coal mines will improve social welfare and living standards, provided mining is conducted following environmental best practices that align with EU and IFC standards.

Timing

Timing of the rehabilitation of Kosovo B must be carefully selected taking into account duration of unit downtime and the status of Kosovo A and NKPP.

Since Kosovo B power plant is a key asset in order to ensure security of supply, the timing of the rehabilitation has to be planned in relation to the progress of other possible projects. Such projects include the NKPP for which a preferred bidder has just (November 2015) been announced, and Kosovo A station which is currently scheduled for decommissioning at the end of 2017¹². Analysis of different scenarios of electricity demand and supply over the next 10 years underlines the significance of the rehabilitation for security of supply, and indicates that a phased approach is desirable, and that the project should be commenced earlier, rather than later. This will be discussed further in section 5 below.

2.2. The Challenges

Public financing of infrastructure projects is problematic worldwide, because of the extremely significant amounts of money involved. This section considers the implications of this challenge at State level, at the level of KEK and at the level of the Kosovo B rehabilitation project itself.

At State level

A critical factor for the Kosovo B rehabilitation is access to capital. To put this in context, the required investment in Kosovo B represents around 70% of the total external debt of the country. This is twice the level of the recent disbursement of

¹² This was the undertaking contained in the Energy Strategy; it was, however, quite correctly subject to NKPP being on stream at that date which, evidently, will not happen.

SDR147m from the IMF. Realistically therefore, it is highly questionable whether it will be possible to raise foreign investment to fund the rehabilitation. In considering the structuring options, it is therefore important to consider where potential financing is likely to be secured. This is most likely to require international financial institutions ('IFI') support (e.g. International Bank for Reconstruction and Development ('IBRD')) with some possible extensions of credit from key export credit agencies (e.g. Germany and the UK). These loans will most likely only be available to the Government or a Government guaranteed entity.

While theoretical structures can be considered, realistically the structuring options must be driven by the extremely limited availability of capital. As mentioned above, capital availability is most likely to be driven by IFIs in which case, even if work commences immediately, it is unlikely that funds are likely to be available within the next 12-24 months emphasizing the need to commence work as soon as possible. With the inherent inflexibility of IFIs, it will be appropriate to agree with them the eventual financing structure which will limit the options for the Government.

The issue of Kosovo's financial credibility has recently been recognized in a report issued by the International Monetary Fund following Kosovo's request for a Standby Agreement¹³. The report recognizes the key challenge facing Kosovo: the need to maintain fiscal credibility on the one hand, while stimulating economic growth on the other. Regarding development projects of Kosovo, it is stated that:

"The program will support a prudent increase in fiscal space for needed development projects. The authorities have requested the modification of the investment clause of the fiscal rule to accommodate additional targeted and much-needed infrastructure spending on high-priority areas. The investment clause currently stipulates that the government can use privatization proceeds to finance capital projects above the 2 percent deficit ceiling (i.e., the excess over 2 percent is not counted as an excessive deficit), if (i) budget commitments are consistent with a deficit of 2 percent of GDP or less; and (ii) bank balances are at least 4.5 percent of GDP. This clause is currently of limited practical value as privatization receipts are low and there are no assets that can be immediately privatized. With technical support from the Fund, the authorities plan to modify this clause to allow for new donor-financed capital projects, in addition to privatization-financed projects, to not count as an excessive deficit against the fiscal rule."

At KEK level

KEK's ability to service its debt is limited.

According to the KEK's Independent Auditor's Reports, KEK was still relying on Government grants and long term financing to support its operations, with significant losses accumulated to the amount of €496 million as at December 31, 2013. Since the company was not able to fully service the government debts according to previous repayment schedule at the end of March 2015, KEK and GoK Ministry of Finance signed a new agreement rescheduling KEK's debt to the Kosovo Government.

¹³ Report dated 31 July 2015 is available from the IMF at <http://www.imf.org/external/pubs/cat/longres.aspx?sk=43141.0>

However, in the most recent years the company has generated profits and subsequent to the unbundling of the Distribution and Supply divisions, it is no longer relying on Government grants. The regulatory framework ensures the principle of cost recovery for valid operating costs, including financing costs and return on investments, and this was confirmed in practice in the 2012 Multi Year Tariff award by the regulator which approved around 285 million EUR over 4 years for KEK mining and generation divisions.

At the transaction level

Since the rehabilitation of Kosovo B power plant requires significant investments, its future depends on its ability to cover its financing costs and earn a reasonable return on its investments through the energy sold.

In particular, in order to successfully obtain financing for rehabilitation, it is most likely that all kinds and guarantees will have to be offered, such as government guarantees, but also some form of political risk insurance from a guarantee agency, such as MIGA, or those offered by the Korean or Japanese agencies. In some cases, the EPC contractors can themselves bring the necessary financing or insurance.

Although Kosovo's financial position is not strong, the transaction could benefit from relatively cheap financial arrangements put in place by foreign export credit agencies ('ECAs'), which often provide beneficial financing for their national exporters; and IFIs, which can provide lower cost financing to governments. ECAs will promote their own national products (equipment) for the transaction as part of the financing deal; IFI financing is heavily conditioned with their internal rules and safeguards set in order to achieve their wider objectives (for instance in terms of environmental or social protection).

Recently, the objectives and rules of many ECAs and IFIs have changed into supporting the move to lower-carbon fuel sources in response to the challenge of climate change, making the financing of lignite fired power plants become much harder¹⁴.

However, in the case of *rehabilitation*, the criteria are softer, which can be seen from the example of the "Kosovo Power Project Report of the SFDCC External Expert Panel to the World Bank" from 2011 and 2012, with the conclusion that the part of the project concerning the proposed rehabilitation and modernization of an existing power plant (Kosovo B), is not required to specifically comply with all the same criteria as for new power plants.

A list of possible funding options that might be addressed for the Kosovo B rehabilitation is given in the following table.

Funding Instruments	Funding Type	Description
Hard Equity	Equity	It represents the share capital of the SPV (only repaid through dividends, not tax deductible, or capital redemptions)
Shareholders Loans	Equity	Contributed by the project shareholders, to balance and optimize project dividends

¹⁴ These issues are explored in more detail in the companion REPOWER-Kosovo report, 'Market Potentials and Challenges'

			(advantages of being a tax shield through tax deductible interests)
Commercial Loans	Debt		Typical syndicated loans, sourced by international and local banks
Export Credit Agencies (ECA)	Debt		Loans covered/insured (and in some cases directly financed) by Export Credit Agencies, which guarantee and/or insures the project to other national and international lending banks
Multilateral Agencies (e.g. World Bank)	Debt		Loans insured by multilateral agencies established by intergovernmental agreements (designed to promote international and regional economic co-operation)

Table 2 – Funding Options and Proposed Financial Structure

In the next section we analyse the two principal options for financing the rehabilitation project.

3. Options for Financing Rehabilitation

Internationally, there has been a widespread move towards privatization over the last 20 years, but the lack of clarity on objectives and the failure to precisely define risk sharing has resulted in questionable investment decisions in many countries. In this context it is important to assess the long term government objectives for the Kosovo power sector and to consider the best way of delivering those objectives in respect of the rehabilitation of Kosovo B.

A prerequisite for investment in the energy sector from private sources is a stable, well-functioning framework for the industry. The sector is probably some way off from being able to deliver this despite the clear objectives. What is needed is a commitment towards a structure which will provide the basis for supporting the move towards privatization (in the sense of private sector ownership of energy assets) but providing a competitive environment to deliver the best returns on limited capital availability.

This implies the need for a well-defined power purchase agreement ('PPA') as an absolute minimum to support any potential for attracting private investors. This would need to have a duration of 15+ years which would then limit any future development towards efficient privatization of the sector. In summary, given the severe time constraints, decisions will have to be taken in the short term which will have a profound impact on the future of generation in Kosovo.

In the rest of this chapter we assess the two principal options for financing the Kosovo B rehabilitation in its current financial situation:

- 'Project' financing, where private sector capital is sought, either for all or part of the financing cost; and
- 'Corporate' financing, where financing is sought directly by the public sector; here, Government of Kosovo and the public sector operator (KEK).

For both of these options availability of financing will be a critical factor in the success or otherwise of the Kosovo B rehabilitation project. The structure that is developed needs also to consider the longer term Government objectives for the sector. Given the importance of Kosovo B within the future generation mix, any decision as to the structuring of the requisite investment will have an impact on the ability of the Government to implement its broader strategy for the sector.

We start with an analysis of issues common to both options.

3.1. Common Issues

Some issues are common to both project and corporate financing.

Pricing

Under either option for financing, the transaction will result in an increased energy price for the output of the rehabilitated Kosovo B plant; this is a necessary consequence of any new investment. Assuming KESCO is the offtaker, this energy price may be subject to regulatory control by ERO in the short term.

In each option there will be elements of a competitive tendering process, but perhaps not for the whole of the costs that go to build up the output price.

A key test under regulatory rules¹⁵ is the degree to which the price has been obtained through a competitive process. The degree of competitive tendering is also important under the KEDS Implementation Agreement, and may impact on whether KESCO is prepared to sign the PPA.

Until the financing option is selected, and final details agreed, it will not be clear the extent to which ERO will be able to approve a direct pass-through of the output price under its pricing rules. It is because of this uncertainty that ERO's approval is a precondition for accepting a PPA under the KEDS' Implementation Agreement.

This will be an important issue taking into account going forward; this will come into sharp focus under option 1, as discussed further in section 3.2 below.

Engineering, Procurement and Construction ('EPC')

An EPC contract will be required under both options. In the case of the Kosovo B rehabilitation, investment costs are lower, but contingency requirements (i.e. the amount budgeted for the unexpected) are much higher than for a new power plant, since the project carries a substantially higher probability of cost overruns. That is the risk that neither the investors, nor the EPC providers, want to take, and which – if Government wishes to transfer the risk to them - they will want to mitigate by any means.

Although in reality it is almost inevitable that cost overruns will occur, the company responsible for the Kosovo B rehabilitation will need to protect Kosovo interests by managing as effectively as possible the fixed price, 'turnkey'¹⁶ EPC contract. This will be done according to international commercial practice (for example following the FIDIC rules, applying liquidated damages for any slippage from the contracted rehabilitation deadlines. It may be challenging to find an EPC provider who will take this risk of slippage. Mitigation of this risk would therefore be a demanding and important task for the company responsible for the Kosovo B rehabilitation.

Since two blocks are being rehabilitated, the timing or indeed phasing, of the rehabilitation in the context of minimizing the loss in supply during the rehabilitation should be taken into account during the transaction process.

Some specific issues regarding the EOC approach are discussed further in each option in sections 3.2 and 3.3 below.

Long term Lignite Supply Agreement

It is understood that it is Government's intention to unbundle the mining activities of KEK into a separate unit, which will sell lignite at arms' length to any lignite generator. If that is so, then under both options the treatment of lignite supply is

¹⁵ Generation Pricing Rules, see Schedule 9 of the Rule on the Regulated Generator Pricing published by ERO (2011).

Available at http://ero-ks.org/Rregullat/Rregullat_2011/English/Generation_Pricing_Rule.pdf

¹⁶ Under a 'turnkey' EPC contract, the works are completed and commissioned and the plant is fully ready to operate on handover.

similar. That is considered to be a very positive decision for the rehabilitation project.

The lignite off-taker will not want to have any risk regarding the availability of the lignite needed to run the power plant, so a secure and reliable long term lignite supply agreement is a prerequisite for securing the deal. This is equally important for KEK generation, as for a private generator.

The lignite supply agreement will need to be backed by all the warranties and guarantees necessary for a reliable and stable lignite supply at the contract price. Special attention will need to be given to the quality of lignite delivered, such as its calorific value, moisture content, ash, sulfur, clump sizes, and also to the International and Kosovo environmental, health and safety standards and legal requirements. During project preparation, it will be necessary to provide a cost assessment of the actions needed to be taken to ensure that environmental, health and safety standards are met during lignite mining, supply and use. These costs must be factored into the finance package.

Feasibility Study

As mentioned in section 2 of this Report, EU feasibility study is now at the contracting stage. It is our understanding that the study will:

- (i) analyse the actual situation of equipment (materials),
- (ii) prepare the technical specifications for different options of rehabilitations, and
- (iii) assess different options for the life extensions.

The timing of the delivery of this feasibility study will have an important bearing on the possible timeline for Kosovo B rehabilitation, as it must be available to include with the Request for Proposal (RfP) package.

Special purpose vehicle (SPV)

A special purpose vehicle is a 'shell' company, an empty corporate body created especially for a transaction. Into this empty shell, the Government transfers the assets and liabilities that are associated with Kosovo B, and necessary for its operation (this is legal unbundling, i.e. separation into a distinct legal entity). This gives great transparency over the target of the transaction simplifying due diligence, as well as making the legal tasks for any transfer of ownership a great deal easier. We have included this under common issues, although it is not *strictly* necessary under the corporate financing option, but brings the benefits of transparency. KEK is currently unbundling the Kosovo B assets and liabilities right up to the step before this legal unbundling, and Government may decide this to be sufficient as there are cost implications of going further (additional supervisory board, etc) under Kosovo law. In section 3.2 below, aspects of the SPV are discussed a little further in respect of the project financing option.

Procurement

In principle there are several options for procurement, such as bilateral negotiations, negotiations by "Letter of Invitation", and through international competitive tender, each having certain advantages and disadvantages regarding the duration, amount of the development costs involved, risks of litigation, obtaining competitive prices, etc.

The options according to Kosovo law are more limited. The law on Publicly Owned Enterprises [(No. 03/L-087) supplemented by the law No.04/L-111 and by the law No. 05/L-009], provides the basis for selling shares of POE. Pursuant to the Law on Public Procurement, Law No. 04/L-042, amending and supplementing the Law 2013/04-L-237, a strategic partner would be selected through an international competitive tender. A new law on strategic investment is currently before the Assembly.

3.2. Option 1 – Project Financing

Overview

The project financing option assumes the involvement of a strategic partner who would then be responsible of securing financing for the project. This means that this option would represent a type of a public-private partnership ('PPP'), and the power plant would be rehabilitated under either a rehabilitate-operate-transfer ('ROT') or a rehabilitate-own-operate ('ROO') basis¹⁷.

There are benefits in a long-term approach. Where the strategic partner will be the operator long-term, his interests in the rehabilitation works become aligned with those of Government: both have a strong interest in the quality of the works, not simply in their completion date or cost.

Regarding the ownership structure, Government of Kosovo could choose whether or not it wants to retain partial ownership of the rehabilitated power plant in the long term.

A precondition for the project financing option of the rehabilitation of Kosovo B power plant is the unbundling of Kosovo B from KEK into a new, separate legal entity known as a special purpose vehicle (SPV). The Kosovo B assets would then be transferred to the SPV. The Government of Kosovo would then seek a strategic partner to carry out the rehabilitation works.

The activities of the strategic partner would comprise the obligations to bring both equity and debt for the financing of the rehabilitation so the key criterion for the selection of a strategic partner is its ability to provide financing.

Under the project financing option, a strategic partner would be required to secure the rehabilitation under a fixed price, turnkey contract. The obligation of the strategic partner would be to rehabilitate Kosovo B according to a selected and pre-defined technical solution in order to fulfill security of supply objectives, by entering into an EPC contract for the rehabilitation works.

The strategic partner would also undertake ongoing operations and maintenance of the plant during and after the rehabilitation works, either directly, or by engaging an O&M subcontractor, typically for a period of 15-25 years.

¹⁷ Under ROT, the investor carries out the works, then operates the plant on behalf of GoK (owner) for a specified period of time, and then transfers operating control back to the Government once specific conditions are met. By contrast, under ROO, the investor continues as both owner and operator of the plant into the longer term.

The obligation of Government would be to facilitate the provision of a long term agreement for the offtake of electricity¹⁸ with KESCO (subject to the considerations discussed under '*Long term PPA*' below), and ensure the provision a long term lignite supply agreement. Most likely the whole transaction will need to be backed up with government guarantees and political risk insurance, such as e.g. Multilateral Investment Guarantee Agency ('MIGA') guarantee, in order to raise investor confidence.

A number of other contractual issues arrangements will need to be settled as part of the bidding package under this option, to expressly agree terms for ash disposal, water supply etc. These have to be agreed in final form prior to financial close¹⁹.

A number of important features of each of these points are now discussed in turn and in more detail below.

Financing

Both equity and debt for financing of the rehabilitation will be secured by the strategic partner through the Kosovo B SPV, so the key criterion for the selection of a strategic partner is its ability to provide financing. Other factors, such as the cost of possible equity and debt that will influence the final price, will also play important role, since they must be recovered through the offtake price.

In the bidding procedure, the bidders will have to submit a detailed financing plan that will include the sources of equity that will contribute to fund the development, rehabilitation, and commissioning of Kosovo B. The plan must identify the sources of the sums reserved for contingency, the internal rate of return that the strategic partner requires to make on his equity investments, the debt to equity ratio offered, the tenor (term) and price of the debt, and other conditions relating to the debt.

The Kosovo B rehabilitation presents substantial risks for investors and lenders²⁰. The key reasons for this are:

- the very high likelihood of cost overruns for the rehabilitation;
- risk of the country and its low credit rating;
- lack of investor confidence in legal system and judiciary;
- the immaturity of the energy market.

In order to successfully secure a strategic partner under the project financing option, the project structure needs to be developed so as to use all possible tools to increase investor confidence. It is most likely that government guarantees and political risk insurance, such as a MIGA guarantee, will need to be offered by way of back-up guarantees.

¹⁸ Such agreements for the purchase, sale of capacity and/or energy and the delivery of energy of may have different names: agreements for the purchase or sale of power or energy, for offtake or bulk supply. In this report we use the term 'power purchase agreement' (PPA) in a generic sense as being the one most familiar in Kosovo.

¹⁹ Financial close occurs when all the project and financing agreements have been signed and all the required conditions contained in them have been met. It enables funds (e.g. loans, equity, grants) to start flowing so that project implementation can actually start.

²⁰ Naturally, it also presents some opportunities. These are discussed in REPOWER-Kosovo's companion report '*Market Potentials and Challenges*'.

Investors will need confidence that they will collect enough cash through selling their output for the repayment of debt and to earn a return on their investment. The project structure could, for example, provide that in the event of higher than expected revenues, cash be set aside to pre-pay parts of a debt that has not yet fallen due. This would effectively mean front-loading the amortization of the debt.

The PPA would probably need to include mechanisms to address the high risk of cost of overruns mentioned earlier, perhaps by allowing flexibility in negotiating the capacity charges.

In the light of the above, it is clear that the choice of experienced transaction advisors is essential in order to increase the chance of finding a strategic partner and to have access to project financing. Such advisors must be able to use and negotiate flexible project structures, and have experience with obtaining any necessary security, e.g. MIGA guarantees or other political risk insurances.

ROT vs. ROO

Both the Rehabilitate-Own-Operate ('ROO') and the Rehabilitate-Operate-Transfer ('ROT') models have emerged from the Build-Own-Transfer structure developed in Turkey which subsequently developed into a Build-Own-Operate structure eliminating the requirement to transfer the assets back to the Government once the term of the agreement expired or in certain events of default.

There are many issues to consider in these models but the key difference is that in the BOO model there is no assumption of a terminal value and the investor is not expected to recover his investment uniquely in the contractual period. This recognizes that typically a power plant will have an asset life much longer than the underlying PPA. In a BOO scheme, investors must have confidence in the underlying market structure to be able to ascribe a value to the power plant beyond the term of the PPA. This requires clarity in the future development of the market which is not currently the case in Kosovo. If this can be achieved, the advantage to Kosovo is that Government and the Strategic Investor have their interests aligned, reducing risk of dispute.

In both ROT and ROO models, a strategic partner will be asked to take over the existing Kosovo B power plant to rehabilitate it, and to take over the operation and maintenance in both cases for a period of time either under a ROT or ROO model.

An important difference between the ROT and ROO models is liability for decommissioning costs. Under the ROT model, decommissioning liabilities would fall to Government, since ownership of the assets would be transferred back to Government before the end of the station's useful life. Under the ROO model, the assets are not transferred back to Government and so the private sector operator is liable for the costs of decommissioning. The more liability is assumed by the private sector, the higher the *apparent* transaction cost will be, as the investor will extract more rent from the station over its life for energy sold to cover the cost of future decommissioning. It should be recognized however that even under ROT, the unit cost of electricity from the rehabilitated plant should include future decommissioning. Otherwise, government would face a similar unfunded liability as it faces with Kosovo A.

Retaining Ownership or Full Privatization

Both ROO and ROT models, through a tender procedure, can be organized in such a way that the Government of Kosovo retains partial ownership. Retaining more than 50% of ownership by the GoK is not recommended because it would give less confidence to the potential strategic partner, which may lead to the latter seeking control through other conditions in order to protect their interests.

While control issues can be addressed through shareholder agreements (certain aspects of control can be retained even without a majority shareholding), it is unlikely that investors would be attracted to undertake extensive work on bidding for and, if successful, managing the company with a large percentage of the financial rewards going to the Government.

In the case of the GoK remaining in ownership, it would have to provide additional equity in proportion to the ownership kept and, in exchange, it would have the rights to dividend payments.

Special Purpose Vehicle (SPV)

For the project financing option it is normal to transfer the assets which are to be the subject of / involved in a transaction into a ring-fenced, separate legal entity outside the public sector. This gives great clarity and transparency over the assets and liabilities involved, and facilitates the legal transfer process. A first step is to create a legal private-capital business organisation as a 'shell company' under local law – the special purpose vehicle - and then to transfer into it only those assets and liabilities that are agreed between Government and the Strategic Partner.

Government of Kosovo has directed KEK to continue the unbundling process in the sector, with a view to identifying those assets and liabilities that are necessary for Kosovo B stand-alone operations. Once that process is complete (but not before) the SPV can be created, and the transfer effected at an appropriate time in the overall transaction timetable.

Long term PPA

A long term PPA would also be required to establish terms for the offtake of the energy produced and payments for the available capacity and energy. As the principal offtaker available in Kosovo is in private ownership, the PPA would need to be negotiated freely between the strategic partner and KEDS/KESCO. In entering into the Bulk Supply Agreement in October 2012, KEDS and its shareholders undertook to carry out such negotiation in good faith with the Government's transaction advisors, provided that:

- (a) *“the selection process for the strategic partner is competitive and transparent;*
- (b) *that KESCO and its shareholders are consulted on the terms of the proposed agreement;*
- (c) *that the terms of the proposed agreement are commercially reasonable (having regard to KEDS's own obligations, the price of energy offtaken, the duration of the agreement, the nominal capacity and – importantly –*

*on ERO's confirmation that the resulting energy cost may be passed through KEDS' own tariffs to customers"*²¹.

The PPA would most likely have to be offered to the strategic partner for the whole lifetime planned after the rehabilitation, most likely 15 to 20 years. Since the Kosovo electricity market is very simple, with 2 principal power plants (Kosovo A and Kosovo B) producing 97% of the total energy, and with almost all energy currently sold to customers through the regulated tariffs, a PPA would be negotiated between the Kosovo B SPV and KESCO (public supply company in Kosovo)²² or - more likely - would be negotiated between the Government's transaction advisors and KESCO before being included in the tender pack. As shown above, the provisions of the October 2012 KEDS Implementation Agreement anticipate such negotiation and place obligations on Government in terms of both the tender process, due consultation and the reasonableness of the PPA's economic terms²³. These obligations are not unreasonable, and should be borne in mind going forward, recalling in particular that a failure to honor a contractual commitment to an existing private sector partner would give a very negative message to a future partner about the Government's good faith.

KESCO as a public supplier would sign a contractual agreement with the future Kosovo B SPV. KESCO would benefit from increased energy available for sale to its customers over the contract period, ERO and Government would accomplish the goal of increasing the security of supply, while the seller (Kosovo B SPV) would have a certainty of revenues that should allow cost recovery over a longer period.

The strategic partner will calculate the PPA price which would, over the contract period, allow recovery of all investment costs incurred in the operating the power plant, together with the variable costs for production of energy and a return on his investment. Such costs will include costs incurred *during* rehabilitation, such as rehabilitation costs, financing costs during rehabilitation and will take into account a contingency; and costs incurred *after* the rehabilitation and after the start of operations of the rehabilitated power plant, such as fixed operation and maintenance costs, interests and fees, and the shareholders' remuneration.

EPC

In addition to the common issues relating to the EPC contract discussed in section 3.1 above, some specific issues arise in a project financing context. Under this option, a strategic partner will be required to secure a fixed price, turnkey EPC contract.

Securing a fixed price turnkey contract is more demanding in the case of rehabilitation, since the risk of cost overruns is very high. International experience suggests that it will be hard to find an investor who will completely assume the risk of

²¹ Cf particularly Clause 4.3 of the Implementation Agreement entered into between The Government of Kosovo, KEK, Çalik, Limak and Kosovo Electricity Distribution company (KEDS). As KEDS is now legally separated into KEDS (distribution) and KESCO (supply), the actual obligation will now fall on KESCO.

²² At least under the current law in force. We note however that MED's draft 2015 amendments to Article 7 of the Law on Electricity envisage that all electricity producers must 'offer their capacity in a transparent, non-discriminatory and market-based way to all customers on the wholesale and retail electricity markets'. This text is potentially problematic as it would appear to constrain the ability of the strategic partner and KESCO freely negotiating the PPA without first making a public offer of sale.

²³ See note 7 above.

cost overruns. Mitigation of this risk will therefore be a demanding and important task for the whole process of finding an investor. This highlights the importance of the EC-funded Feasibility Study discussed in section 2 above.

A certain contingency reserve within the capacity charges, or some other mechanism would most likely have to be allowed, in order to provide the strategic partner with the tools for mitigating the risk of high possibility of cost overruns.

Operations and Maintenance

The O&M obligations will be transferred to the strategic partner, who will have to demonstrate experience in operating and maintain generating facilities that are similar to Kosovo B, or the intention of appointing an O&M contractor with such experience. Government will require an adequate and high quality plan for operating and maintaining Kosovo B to be submitted in the bidder's technical proposal. This will include the proposed organizational structure and staffing plan for the personnel that will operate and maintain the power plant and provide support services.

The O&M charge will comprise *fixed* O&M expenses, which are calculated and expressed as a percentage of the Capacity Charges, and *variable* O&M charges, expressed in hours of producing energy as a part of the Energy Charges. O&M expenses will also include measures needed to be taken in order to meet environmental, health and safety standards.

The contractual structure for the EPC and O&M elements should further assessed in the context of whether the tender dossier will ask for a single, blended EPC and O&M price or separate prices. This would need to be reflected in the contractual structure. Some EPC contractors may prefer to do only rehabilitation part and will wish to see a separate set of contractual obligations which can be sub-contracted; others may wish to carry out both activities.

Other issues

If the project finance option is selected, a number of other contractual arrangements will have to be agreed at the start of the process. These include the ash disposal agreement, the water supply agreement, the electricity connection agreement which is today in place between KOSTT and KEK, heat supply agreement with Termokos, transfer agreements, and environmental compliance.

Once again, experienced transaction advisors have to be hired in order to successfully negotiate and implement all the detailed arrangements.

3.3. Option 2 – Corporate Financing

Overview

By contrast to the project financing option, corporate financing is more straightforward, and the arrangements are simpler as Government retains much more control and flexibility.

Although the structure of the project is undoubtedly simpler, this option brings the credit-worthiness of KEK as the counter-party into sharp focus. Government guarantees will be required, potentially supplemented by political risk insurance. Government may choose the level of equity that it places into the Kosovo B project

vehicle (the SPV), if indeed an SPV is established, which is probably desirable, but not *strictly* essential under this option.

The Government will need to determine the level of ownership in Kosovo B that it wishes to retain in future: even if the project is undertaken with full State ownership, this does not preclude future asset disposal, or the raising of equity through a partial privatisation in future. This is therefore a decision that is less time-critical for Government than under the project financing option.

Under corporate financing, a critical issue for the project will be the ability of KEK as the counterparty to manage an experienced and commercially-astute EPC contractor, because in this case there is no experienced strategic partner to take on this responsibility and liability. Direct management can increase risk for the public sector and this requires careful consideration. One mechanism frequently used is for the public sector body to hire its own expert manager, who can bring experience in EPC contract management and protect KEK's interests. There is of course an additional cost to this, perhaps of the order of €1-2 million, but it has the potential to save multiple millions in delays and disputes and is advisable if this option is selected.

As with the project financing option, the precise specification of the rehabilitation project works and associated environmental mitigation is critical. The EC-funded Feasibility Study is equally essential here.

As with the project financing options, operations and maintenance of the plant would be undertaken by the same Kosovo B teams as are currently employed, but responsibility for O&M may be contracted out, or kept in house.

For other services that will be required for the project – lignite supply, ash handling etc - these can be 'internal' arrangements, or more formal 'legal' agreements based on good international commercial practices that meet environmental, health and safety standards. Government has more flexibility here, but there are issues to consider.

These points are now considered in turn in a little more detail.

Financing

A critical factor for the Kosovo B rehabilitation is access to capital. To put this in context, the required investment in Kosovo B represents around 70% of the total external debt of the country. In the case of the corporate financing option, the credit-worthiness of the public sector operator, KEK, will be the key issue. It will therefore be essential under this option that the Government of Kosovo provide Government guarantees to support the equity and the debt that would be raised by the company. This option will restrict the total debt-carrying capacity of the Government, which may be a crucial factor in determining which option to take.

Regardless of this Government support, the risks for the lenders of investing in the Kosovo B rehabilitation will still be high, so besides the government guarantees, political risk insurance may also ultimately be required.

Even under this option, it is possible to require the EPC contractors to bring financing. The transaction advisors appointed by Government must have experience with financing rehabilitations, but must also have demonstrated experience of securing political risk insurance, (whether MIGA guarantees or other political risk insurances).

Some equity contribution may be provided to the company by the Government of Kosovo, which may make this option a heavier capital burden than the project financing option.

Although the merchant risk would be taken by the government owned company, in order to support the rehabilitation and to reflect the additional costs incurred by the rehabilitation process, there will still need to be an increase in final retail costs paid by customers.

Ownership

As with project financing, Government will need to make a decision about the future ownership of the Kosovo B assets. Assets can remain in the ownership of the country, or they could be transferred to the private company that will be responsible for the future rehabilitation and O&M.

This decision will influence the choice of company that will be responsible for both the future rehabilitation and the long term O&M of the Kosovo B power plant.

Special Purpose Vehicle

A second decision to be taken concerns the legal entity that will be responsible for the future rehabilitation and O&M of the Kosovo B power plant. This could be KEK, or a newly created SPV into which the Kosovo B assets and liabilities could be placed. Unlike in option 1, such unbundling can be completed up to legal separation, but does not necessarily mean *ownership* unbundling. The SPV can therefore remain fully or partially State-owned.

EPC

Since two blocks are being rehabilitated, the timing of rehabilitating will be one of the topics to be considered in the process, and will be easier manageable than in the option with the strategic partner.

In the case of the corporate financing, the company that will be operating the power plant needs to define and agree with the government and KEK a comprehensive schedule of the works required to be done, agree the structure of the contract and prepare the necessary tender documents to contract the EPC for the rehabilitation works.

By contrast with the project financing option, there is no strategic partner to manage the EPC contractor: under corporate financing, an important issue for consideration is KEK's ability to manage the EPC contractor effectively. KEK is unlikely at present to have in-house the resources, skills and experience to manage a very experienced EPC contractor whose interests will not be aligned with those of KEK. A common practice in such a situation for companies such as KEK is to appoint an 'employer's engineer' who is experienced in the management of such a contract and in carrying out the approval, decision making and a adjudication role that is essential under EPC arrangements. This is foreseen in the FIDIC suite of contracts which is likely to be the model for the EPC contracts. KEK – or rather, legally, the SPV - would therefore subcontract with a reputable engineering company that would define all the required works and prepare comprehensive tender documents.

Operations and Maintenance

It is possible either to outsource O&M to an experienced contractor, or to leave the activity under existing KEK management. In either case, it is most likely that the majority of the personnel would remain responsible for day-to-day activities. It should be recalled that the contractor would bring perhaps only a very small number of key personnel as senior management.

Operations and maintenance of the plant would be done by the SPB as its core business. O&M will also include measures needed to be taken in order to meet environmental, health and safety standards.

Agreements

In line with the Government's unbundling strategy, a long-term lignite supply agreement would be entered into between the mine operator and Kosovo B Company as generator; these could be two legally unbundled parts of the same overall KEK structure.

Government has substantially more freedom in putting these arrangements in place – it does not necessarily need to put in place formal legal agreements, as the activities all take place within the public sector. However, contracting on a sound commercial footing is a valuable discipline. It helps the energy businesses of KEK operate on a transparent commercial footing, which will help promote efficiency, it facilitates effective regulation, which is good for consumer protection, and by improving transparency may protect Government and KEK from entering into arrangements which could conflict with European rules, for example on State aid.

Timing

The development period is shorter due to the fact that there is no need for the all arrangements to be negotiated and contractually agreed *upfront*, such as the treatment of potential cost overruns, although this will ultimately have to be carefully negotiated with the EPC contractors.

The corporate financing option offers more flexibility regarding the timing of the rehabilitation, and its alignment with the Energy Strategy of Kosovo and other projects. It should be noted, however, that this flexibility on timing contains an inherent risk: the energy sector (and therefore the economy) is vulnerable until NKPP is built and commissioned, so a relaxed approach to timing is likely to encourage slippage, which may expose the sector to additional energy shortfall if, for example, Kosovo A becomes unavailable and/or import prices increase excessively.

4. Comparison of the Options

A comparison of the options with a summary of pros and cons regarding the most important topics for bringing the decision is given in the following table:

Issue	Project Financing	Corporate financing	Comment
Financing / Government spending	In theory financed off-balance sheet (but since government guarantees will most likely be needed, this benefit is more apparent than real), but no need for equity contribution in cash	Ties up capital (Government support is needed in providing guarantees and equity)	Project financing option may be more acceptable for the Government of Kosovo, but is a more difficult option to deliver successfully, as history has shown with NKPP
Timing	More difficult to plan because a long time is needed for the negotiations with the strategic partners; but there is a powerful imperative to conclude a deal, then act on it	Easier to plan and shorter time to market	Corporate financing offers more flexibility regarding planned timing
Chances of failure	Higher, since it depends on the strategic partner as well	Lower; if it stalls, there is no strategic partner to walk away leaving Government without a transaction process	Corporate financing has less chance of failure
Risk of dispute	The interests of the strategic partner are aligned with those of Government, reducing risk of dispute; (but KESCO's are <i>not</i> and this is a risk)	The turnkey contract underpins a relationship where the parties have different interests, and so they are prone to dispute (but equally, there are standard	Disputes are a risk in both circumstances, but may arise in different ways. Experienced transaction advisors will assist GoK in identifying appropriate mitigation measures

		techniques for mitigation)	
Lignite supply / O&M etc agreements	Very important, and would have to be negotiated upfront	Very important, but do not necessarily have to be planned or negotiated upfront	Corporate financing offers more flexibility regarding timing since both the parties are government owned, but inexperience may increase the risk of poor or delayed commercial contracts
Cost overruns	Highly likely, but the experienced strategic investor will offer more realistic planning	Very high probability since governments are not usually experienced in managing complex projects	Project financing with the strategic partner offers less risk of the unplanned cost overruns, since an experienced strategic partner will expect rigorous planning and implementation

Table 3 – Comparison of the Options for Financing

5. Timelines

The first and crucial step for closing the deal of rehabilitation of Kosovo B in any option for financing is clarity over the specification of the rehabilitation works which should be an output from the EU funded feasibility study and which is needed for the RfP package. A comparison of the expected timeline for the delivery under each option is illustrated in Figure 2 – Comparison of Timelines.

Since Kosovo B power plant is also a key asset in order to ensure security of supply, the timing of the rehabilitation has to be planned in relation to the progress of other possible projects, such as the NKPP project that has currently selected its preferred bidder for a possible partnership. A realistic view of the timing of Kosovo A decommissioning must also be taken into account.

It needs to be emphasized that the timelines illustrated here are indicative only: the overall process is dependent on a number of decision points on related issues which may influence the timelines and need to be taken into account. These are shown in the table below.

Issue	How this impacts
Coal mine extension	Any delay in decisions about extension are significant as extension is a precondition to ensure a reliable and quality supply of the lignite to the power plant in an environmentally sustainable manner
Permitting procedures	The permit process is defined by law but may not match the needs and momentum of the transaction ²⁴
Unbundling model	There are a number of sub-decisions that have to be taken such as valuation of relevant assets and liabilities, legal title of any relevant assets etc. All decisions must be identified, and taken at an appropriate time in the process
Changes to RfP	Frequent changes in RfP might be needed in order to achieve financability, and especially in trying to achieve competition between the bidders (having more bids) and a better price
	The use of different strategies in order to get more bids, by increasing flexibility, e.g. by accepting bids with exceptions, which leads to long lasting negotiations
Possible litigation	Possible litigation for breach of due process (e.g. relating to the Environmental Permits or EIS, or the bidding process itself), especially if NGOs get involved
Requests for extensions	Bidders will be constantly asking for extensions to mitigate the risks and achieve better deals, or because they will need additional approvals from their Boards to continue with the process, or because ECAs will need more time to

²⁴ However, it is noted that a new law on Strategic Investments is now before the Assembly; if enacted, the new law provide a solution

	do due-diligence of Kosovo, etc
Fine tuning	<p>Additional requests and comments from the bidders, e.g.:</p> <ul style="list-style-type: none"> ○ Requests relating to the main risks (EPC selection and contracting, financing, fine tuning of technical solution, political risk insurances); ○ Comments and requests regarding different ways of procuring/selecting the strategic partner (e.g. proposal to use a joint KEK (GoK) and strategic partner approach without binding offer – where a "beauty contest" is held with a number of potential partners, with GoK selecting its preferred partner without binding commitments on the financials, with the project and financials to be developed later jointly by GoK and the selected SP); ○ Potential requests and clarifications regarding ownership structures, etc.; ○ Long lasting negotiations (with KESCO, or regarding exceptions, etc.); ○ Providing clear guidance on the requirements needed to meet environmental, health and safety standards of the EU and IFC; ○ Additional due-diligence to be made on the request of lenders, in order to achieve cheaper financing;

Table 4 – Issues influencing timelines

Comparison of Project Financing and Corporate Financing Option Timelines

A short comparison is given in the following figure.

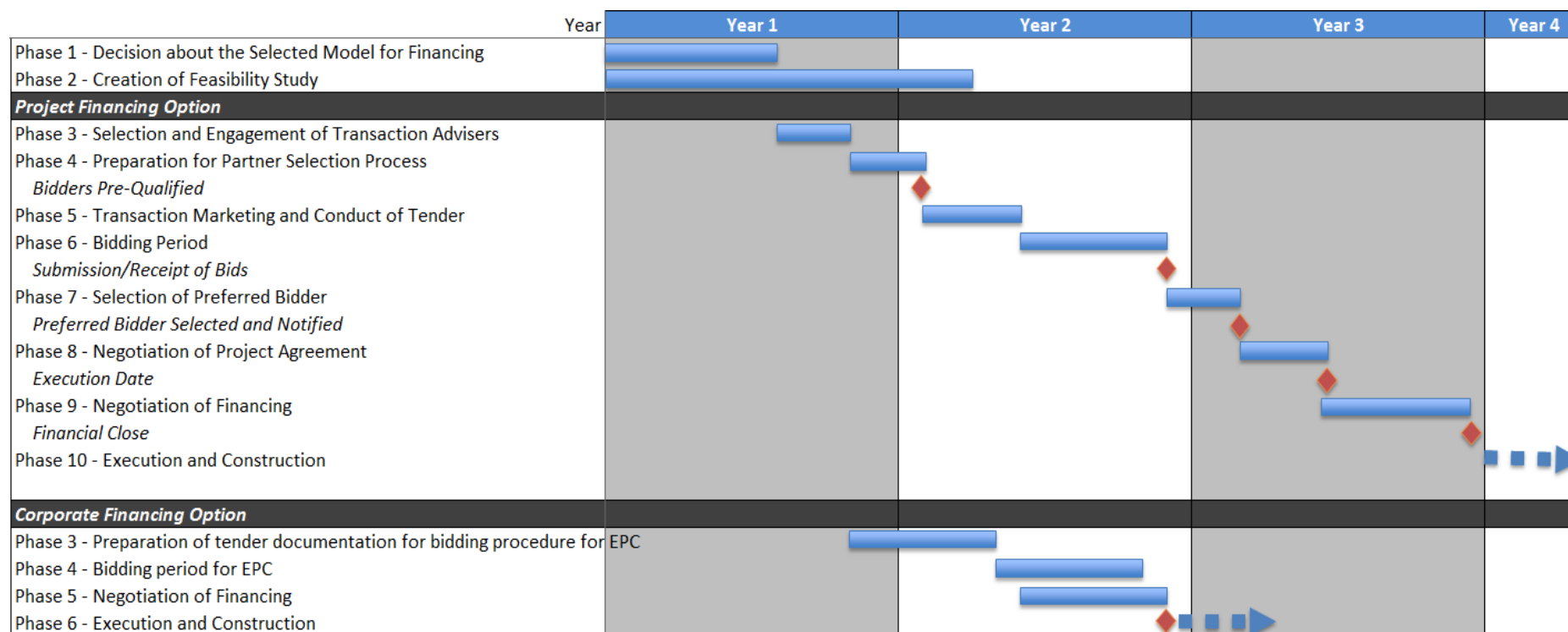


Figure 2 – Comparison of Timelines

6. Conclusions and Recommendations

Regardless of the option for financing selected, creation of the new and updated feasibility study for environmental and other measures on Kosovo B which is in the contracting phase is an absolute precondition to move forward with the project.

The timing of the project is crucial, due to the fact that the security of supply is highly dependent on Kosovo B, so when selecting the structure for financing, other factors that influence timing, such as the chances of failure, or the duration of the process have to be taken into account, as well as time constraints imposed by the decisions regarding Kosovo A and NKPP. Phasing of the rehabilitation works will reduce the impact on security of supply/import requirements.

However, there is one further overriding factor for the Kosovo B rehabilitation which is the availability of capital. To put this in context, the required investment in Kosovo B represents around 70% of the total external debt of the country. This is twice the level of the recent disbursement of SDR147m from the IMF. Realistically therefore, it is highly questionable whether it will be possible to raise foreign investment to fund the rehabilitation. In considering the structuring options, it is therefore important to consider where potential financing is likely to be secured. This is most likely to require support of IFIs (e.g. from IBRD) with some possible extensions of credit from key export credit agencies (e.g. Germany and the UK). These loans will most likely only be available to the Government or a Government guaranteed entity.

The following points should be recognized:

- ❖ KEK has very limited potential to raise the debt by itself
- ❖ No matter which option is selected regarding the structure for financing, strong Government support will be needed in the way of providing government guarantees, and in some cases cash contributions as well, so the decision will have to be made according to the financial potential, the financial strategy of the Government of Kosovo, and the reality for the potential of Kosovo Government to raise debt
- ❖ Besides the government guarantees, it is most likely that the Political Risk Insurance will have to be provided as well, probably in the form of e.g. MIGA or ECA guarantees
- ❖ Funding such a project is a challenge due to the number of risks, such as the risks regarding
 - Environmental, health and safety issues
 - political risks
 - cost overruns and inability to have risk transferred with the liquidated damages to the contracting company
 - credit rating of the country and the possibility of raising debt
 - timing of the rehabilitation
 - etc.
- ❖ Environmental, health and safety risks can be addressed by determining the cost of necessary mitigation measures in feasibility studies, and including these costs in finance packages

- ❖ Finding financing for both, equity and debt, has become harder recently, which can be seen from the fact that even the objectives and rules of many ECAs and IFIs have changed into supporting the move to lower-carbon fuel sources in response to the challenge of climate change, making financing lignite fired power plants become much harder
- ❖ However, in the cases of rehabilitation and where the security of supply can be in danger, the criteria are softer, which can be seen from the example of the “Kosovo Power Project Report of the SFDCC External Expert Panel to the World Bank” from 2011 and 2012, with the conclusion that the part of the project concerning the proposed rehabilitation and modernization of an existing power plant (Kosovo B), is not required to specifically comply with all the criteria as for the new power plants.

While theoretical structures can be considered, realistically the structuring options must be driven by the extremely limited availability of capital. As mentioned above, capital availability is most likely to be driven by IBRD in which case, even if work commences immediately, it is unlikely that funds are likely to be available within the next 12-24 months emphasizing the need to commence work as soon as possible. With the inherent inflexibility of IFIs, it will be appropriate to agree with them the eventual financing structure which will limit the options for the Government.

In summary, the rehabilitation is both necessary and at high risk of failure. Neither option identified in this report can guarantee success, and Kosovo is at a point where failure is no longer an option. The corporate financing option would reduce the risk of failure by giving Government greater control and flexibility over the process and outcome. It would, however, have to provide equity in cash (plus guarantees) which may be challenging for the already over-stretched State finances. In this situation, Government may have no realistic option but to take the higher risk approach of project financing. In this case, the focus must be to recognize the risks and challenges and mitigate those to the greatest extent possible. Careful planning and preparation is key to this, as is the appointment of experienced transaction advisors.

Once Government confirms its intention to rehabilitate the Kosovo B station, REPOWER-Kosovo will support the Government going forward, both in making its strategic decision over the financing option, and then in the detailed planning and preparation that will support a successful outcome.

7. Appendix 1 – Position Of Kosovo B in the Kosovo Electricity Market

The position of the thermal power plant Kosovo B ('Kosovo B') rehabilitation project in the energy sector of Kosovo and of the whole region is described in this appendix.

Firstly, Kosovo's historic and current demand and supply situation is presented. Building on this it was then briefly analyzed future demand and supply in the context of the average available capacity²⁵ under three different scenarios. The data should help to better understand the real significance of Kosovo B for the sector and the necessity for its rehabilitation. The appendix concludes with the main findings of a simple stress test.

In the test, firstly scenarios from the "Study about Security of Supply in Kosovo", Vattenfall Europe PowerConsult GmbH, (March 2013) (the 'Vattenfall Study') were discussed, however, some key assumptions contained in this study are outdated by recent decisions, such as the decision about going forward with the project of construction of the New Kosovo Power Plant ('NKPP') with its timing and size.

Therefore, the following assumptions are used for modeling further scenarios in this appendix:

- Past data (until 2014) – actual data from official annual ERO reports
- Future demand:
 - o the data for 2015-2024 is the same for all scenarios, and is taken from the medium growth scenario from the "Long-term energy balance of the Republic of Kosovo 2015-2024"
 - o the data for 2024-2030 (where used) is extrapolated from the 2015-2024 trend
- Future peak demand:
 - o The data for 2015-2024 is the same for all scenarios, and is taken from the KOSTT Transmission development plan 2015-2024, Base Scenario
 - o The data for 2024-2030 (where used) is extrapolated from the 2015-2024 trend
 - o Future generation – the data differ from scenario to scenario

Kosovo Energy Sector Past Performances

Kosovo's past demand has broadly shown a moderate annual increase as can be seen in the following figure. It is likely that this trend reflects the chilling effect of continuing load disconnection (customers disconnected during energy shortages). Against this demand profile, historic electricity production of Kosovo power plants and net imports are shown in the following figure.

²⁵ Average available installed capacity is calculated in relation to the capacity factors of power plants.

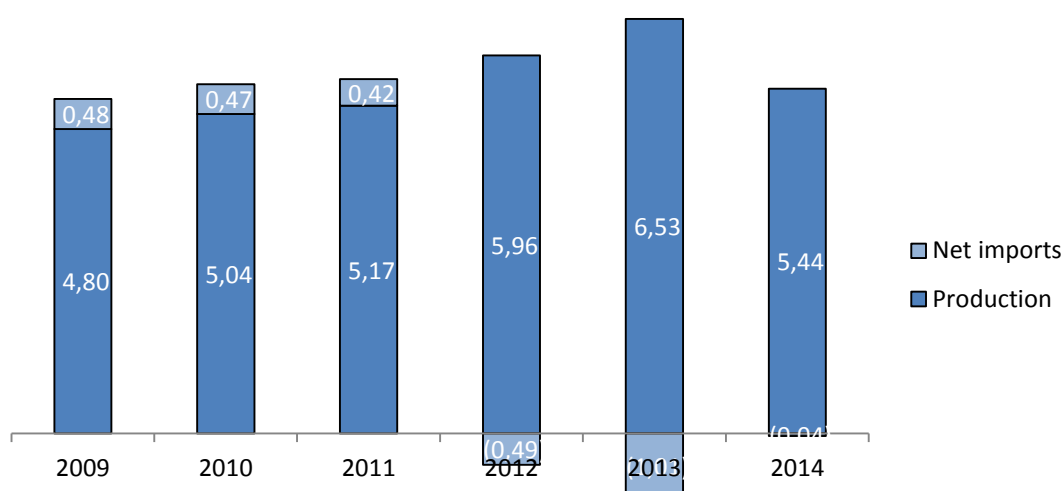


Figure 3 – Net Imports in Kosovo 2008-2014

It can be seen that Kosovo on average is a net importer of electricity. Due to the investments done in overhauls and maintenance since 2010, including in the mines, annual electricity production has increased over the period resulting in Kosovo becoming a net exporter in last couple of years.

Actual capacity factors²⁶ of can be seen in the following table.

	2009	2010	2011	2012	2013	2014
Kosova A (units 3-5) 551 MW Yearly gross production	1.622.000	1.908.000	2.202.701	2.107.735	2.185.529	1.637.886
Kosova A (units 3-5) 551 MW Average Available Capacity	34%	40%	46%	44%	45%	34%
Kosova B 620 MW Yearly gross production	3.638.000	3.573.000	3.493.732	3.739.461	4.196.314	3.646.632
Kosova B 620 MW Average Available Capacity	67%	66%	64%	69%	77%	67%
Total Average Available Gross Capacity	51%	53%	56%	57%	62%	52%

Table 5 – Capacity Factors of Kosovo A and Kosovo B 2008-2014²⁷

However, despite Kosovo B achieving unprecedented levels of availability in 2013, domestic generation was still not able to fully cover peak demand; sufficient energy was produced at times of lower demand, when the prices are lower, but imported during the peak load hours when prices are generally higher.

²⁶ Capacity factor is calculated as a ratio of the power plant's actual output over a period of time, against its potential output if it would be able to operate at full capacity over the same period of time.

²⁷ Source: ERO official reports

Despite having become a net exporter in recent years and KEK's plant achieving higher availability levels, the underlying situation is not sustainable; the following table shows that the reserve margin²⁸ against the peak demand remains negative throughout the period, indicating the insufficiency of generation capacities installed.

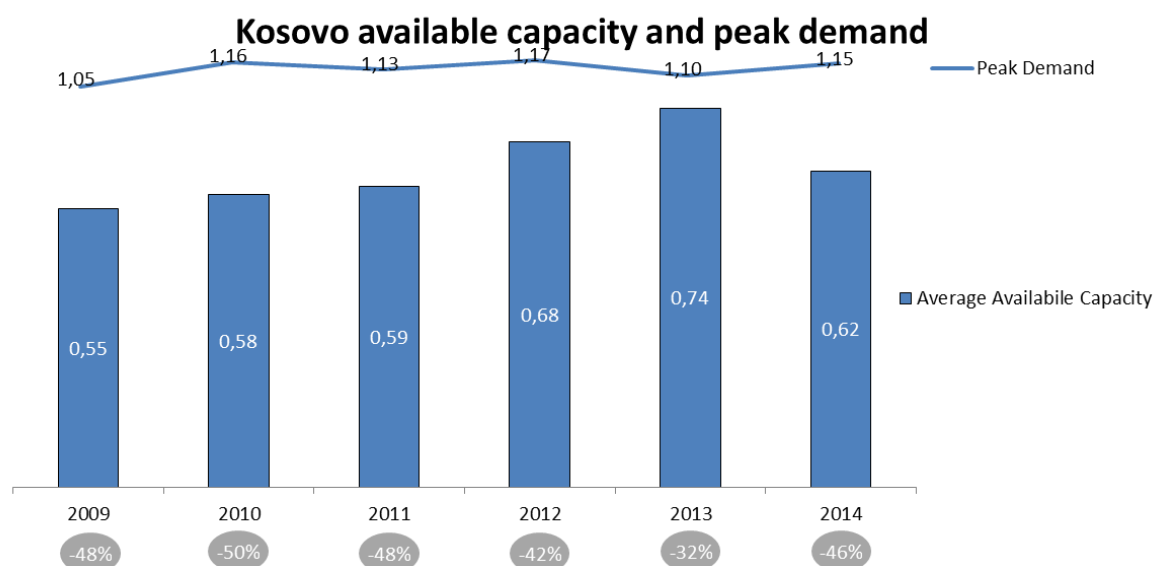


Figure 4 – Reserve Margin

Future Scenarios

The assumptions regarding rehabilitation of Kosovo B are as follows:

1. Rehabilitation of Kosovo B is done in phases as follows²⁹
 - a. Block B1 ('B1') is rehabilitated fully (with ESP) in the first year with B1 out of operation for 8 months
 - b. Block B2 ('B2') is rehabilitated fully (with ESP) in the second year with B2 out of operation for 8 months
 - c. At the end of the second year, after the B2 is rehabilitated, both blocks together are shut down for one more month for the common equipment (cooling tower, etc)
2. Capacity factors:
 - a. Kosovo A capacity factor before decommissioning is taken as the average between 2009 and 2014 (40%)
 - b. Kosovo B capacity factor before rehabilitation is taken as the average between 2009 and 2014 (68%)
 - c. After full rehabilitation, the capacity factor of Kosovo B has increased to 85%

²⁸ For the calculations used in this study, reserve margin is calculated as a measure of average available capacity over the capacity needed to meet peak demand levels.

²⁹ The data used is based on the KEK's expertise and expectations. Final timelines will be determined in the new Feasibility Study that is currently in the contracting phase. The expected date of the final report delivery is not expected to be before December 2016.

3. Renewable energy sources:
 - a. For scenario 2 the data regarding the capacity installed and energy produced from new renewables is taken from the Long-term Energy Balance for the stress test purposes (although these predictions may now be considered unrealistic)
 - b. For the realistic scenarios regarding RES, scenarios 1 and 3, the data regarding the capacity installed and energy produced from new renewables assumes a delay in planned installed capacities and energy produced by an additional 10 years for the stress test purposes
 - c. Examples of potentially unrealistic predictions regarding RES:
 - i. For 2016 it is planned to have additional 609 GWh of energy produced from new hydro-electric power plants (for the comparison, existing hydro-electric power plants produced around 150 GWh in 2014), which would mean around 232 MW of installed power in 2016 (in comparison of around 43 MW installed today)
 - ii. Regarding wind-farms and solar power plants, although today there is almost zero installed capacity and zero energy produced, in 2016 it is planned to have around 82 MW of wind and 10 MW of solar

Three scenarios will therefore be described in this chapter:

Scenario 1 – Realistic scenario

Scenario 2 – Kosovo B not rehabilitated scenario, with RES from the Long-term Energy Balance

Scenario 3 – Kosovo B not rehabilitated scenario, with more realistic scenario for RES

Scenario 1 – Realistic scenario

Assumptions:

1. Kosovo A operates only until the end of 2022 (until NKPP is fully operational);
2. NKPP (500 MW) is fully operational from the start of 2023;
3. Rehabilitation of Kosovo B is done during 2018 and 2019;
4. Installation of RES is postponed to a more realistic scenario;

In such, most realistic scenario, the situation would look as follows.

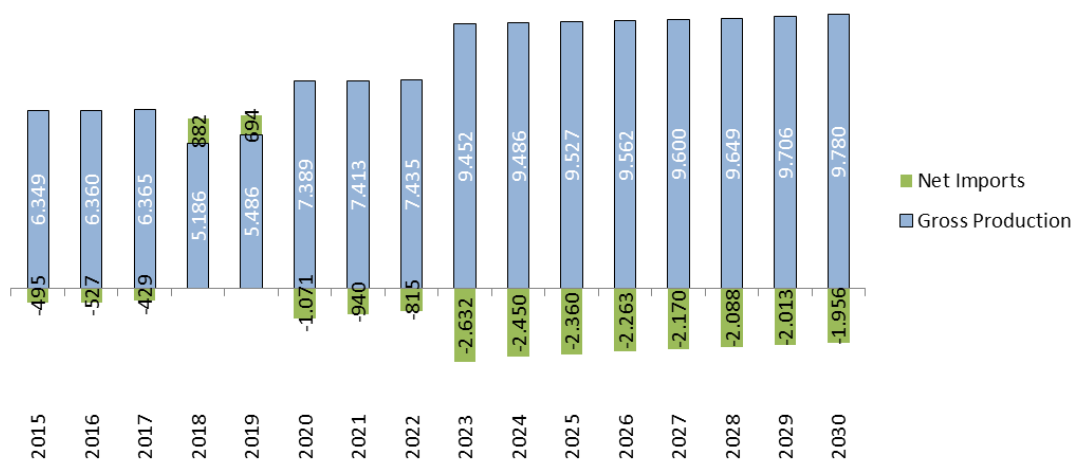


Figure 5 – Import/Export Balance in Kosovo 2015-2030, Scenario 1, Stress Test

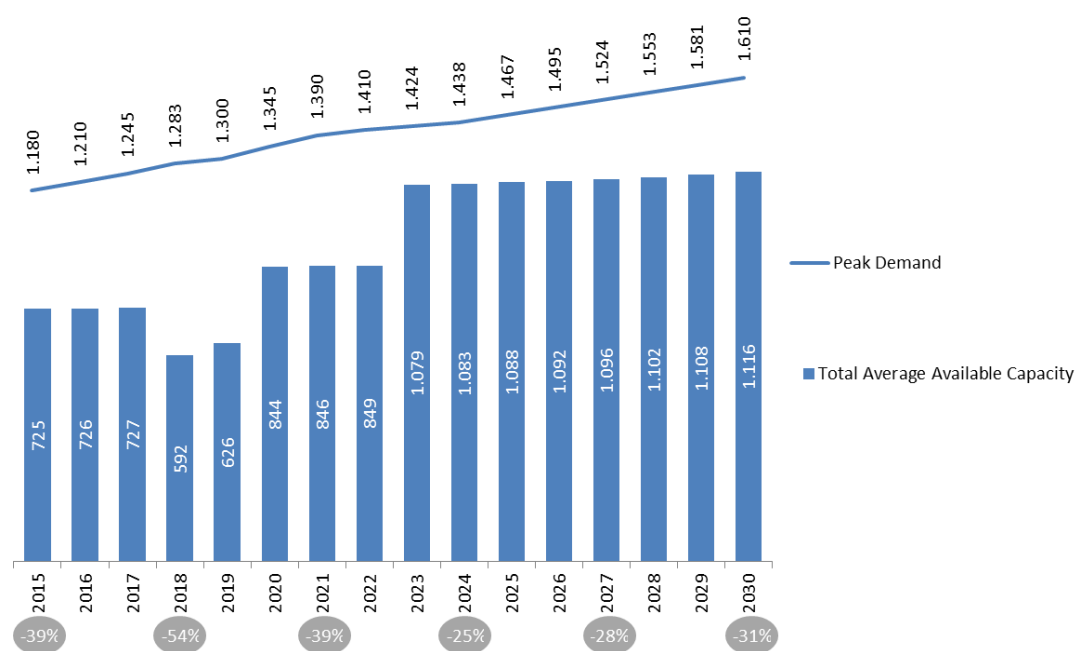


Figure 6 – Reserve Margin in Kosovo 2015-2030, Scenario 1, Stress Test

Under this option Kosovo is a net exporter of electricity, but has a big gap for covering the peak demand, even with the NKPP in operations.

Scenario 2 – Without Kosovo B scenario, with RES from the Long-term Energy Balance

Under this scenario, the scenario 3 is worsened by not rehabilitating Kosovo B:

1. Kosovo A operates only until the end of 2022 (until NKPP is fully operational);
2. NKPP (500 MW) is fully operational from the start of 2023;
3. Kosovo B not rehabilitated; operates only until the end of 2017; between 2018 and the end of 2024 operates only 20,000 hours; after the end of 2024 it is decommissioned;
4. RES as adopted in the Long-term Energy Balance;

Without Kosovo B being rehabilitated, the situation would look as follows.

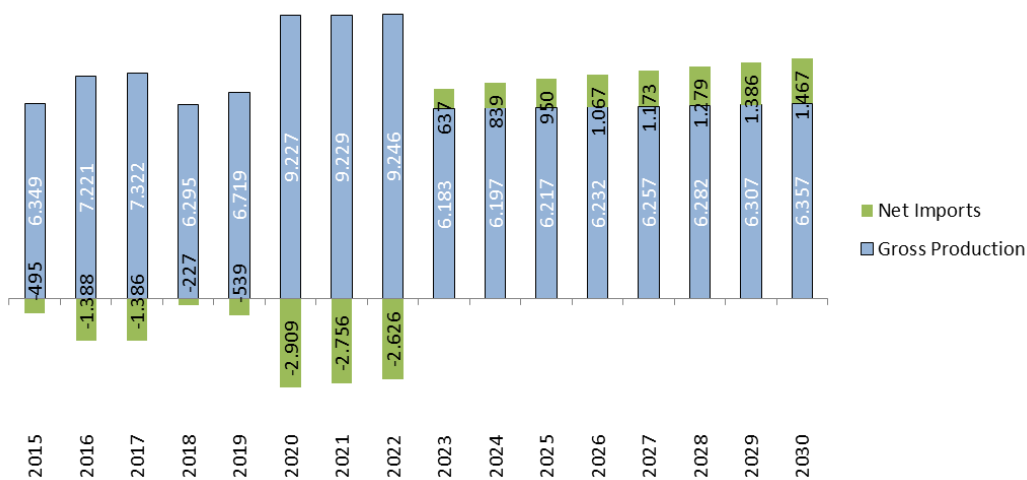


Figure 7 – Import/Export Balance in Kosovo 2015-2030, Scenario 2, Stress Test

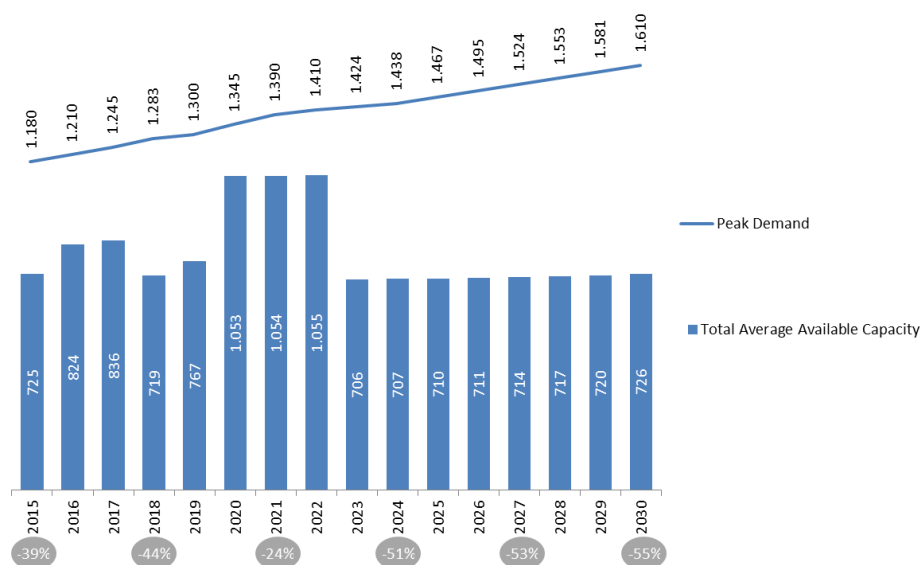


Figure 8 – Reserve Margin in Kosovo 2015-2030, Scenario 2, Stress Test

Without rehabilitation of Kosovo B, even with extremely overoptimistic planning of installation of RES in the officially approved Long-term Energy Balance, Kosovo is net importer of electricity, and has a big gap for covering the peak demand, even with the NKPP in operations.

Scenario 3 – Kosovo B not rehabilitated scenario, with more realistic scenario for RES

Kosovo B not rehabilitated scenario, with more realistic scenario for RES In this scenario, the Scenario 5 is corrected in the way that installation of RES planned by the Long-term Energy Balance is postponed to the more realistic scenario:

1. Kosovo A operates only until the end of 2022 (until NKPP is fully operational);
2. NKPP (500 MW) is fully operational from the start of 2023;
3. Kosovo B not rehabilitated; operates only until the end of 2017; between 2018 and the end of 2024 operates only 20,000 hours; after the end of 2024 is decommissioned;
4. Installation of RES is postponed to a more realistic scenario

In such a scenario, the situation would look as follows.



Figure 9 – Import/Export Balance in Kosovo 2015-2030, Scenario 3, Stress Test

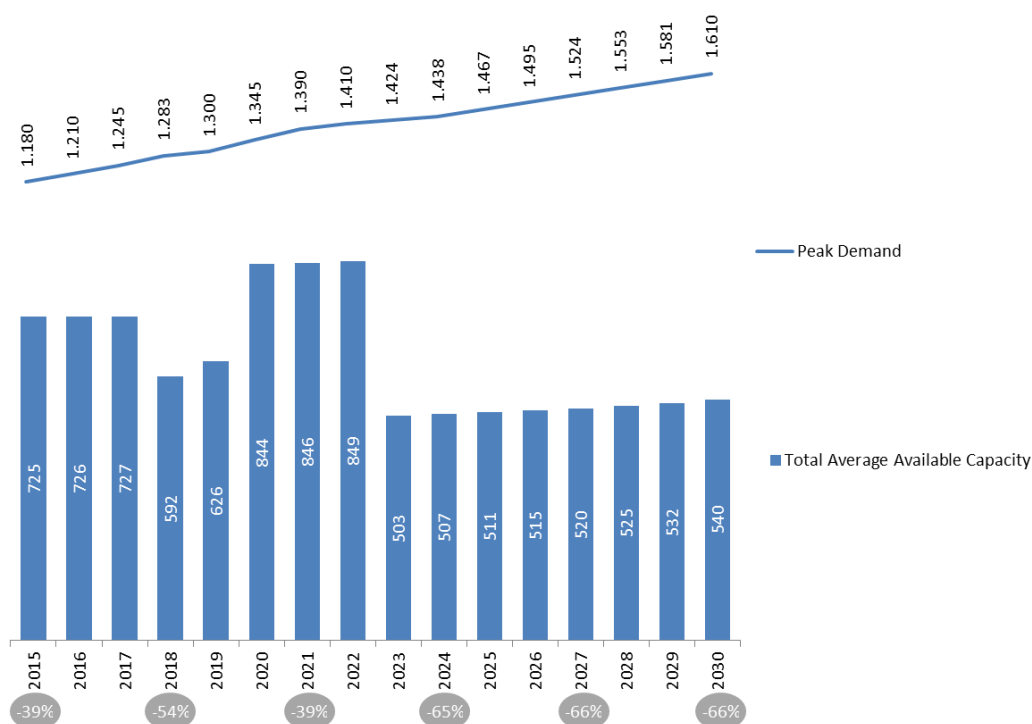


Figure 10 – Reserve Margin in Kosovo 2015-2030, Scenario 3, Stress Test

In this option, Kosovo has huge electricity deficits.

It is also to be noted that in the case of do nothing option, not building NKPP, not rehabilitating Kosovo B nor Kosovo A, Kosovo would be importing almost all of its electricity requirements.

Stress Test Overview

The main findings for the scenarios including worse case scenarios are shown in the following table.

	Scenario 1	Scenario 2	Scenario 3
Kosovo A running	To end 2022	To end 2022	To end 2022
NKPP	+500MW from 2023	+500MW from 2023	+500MW from 2023
Kosovo B rehabilitation	B1 2018 B2 2019	Not done +20,000 hours 2018-2024	Not done +20,000 hours 2018-2024
RES installation	Realistic	Over-optimistic	Realistic
Stress test results	Kosovo as net exporter	Kosovo imports between 10-20% of electricity from 2023	Kosovo imports between 35-40% of electricity from 2023
Import/ export balance			

The results of modeling these scenarios with and without the rehabilitation underline the importance of Kosovo B. In the case of more realistic scenario with installation of RES, without Kosovo B, the imports of electricity would be as high as 40% by 2030.

Stress Test Conclusions

Current predictions of the installation and energy produced from new renewables installed are extremely unrealistic, which can be in short explained with the following two examples:

- iii. For 2016 it is planned to have an additional 609 GWh of energy produced from new hydro-electric power plants (for comparison, existing hydro-electric power plants produced around 150 GWh in 2014, which would mean around 232 MW of installed power in 2016 in comparison of around 43 MW installed today)
- iv. Regarding wind-farms and solar power plants, although today there is almost zero of installed capacities and energy produced, in 2016 it is planned to have around 82 MW of wind and 10 MW of solar

Such overoptimistic planning can endanger the future of thermal power plants, because it gives impression that the security of supply can be achieved with a high percentage of electricity produced from RES. It should also be noted that RES generation facilities generally operate on an intermittent basis, and cannot provide the base-load electricity needed to reliably meet customer demand.

For purposes of more realistic planning, lower expectations regarding installation of RES are put in the realistic stress test scenarios. In such scenarios, situations with and without Kosovo B are taken into consideration. The main findings from such scenarios show that Kosovo B is the critical generation facility for the Kosovo Energy system. In such scenarios, in the case when Kosovo B is not rehabilitated, Kosovo is importing around 40% of electricity by 2030.

It is also to be noted that in the case of the 'do nothing option': not building NKPP, not rehabilitating Kosovo B nor Kosovo A, Kosovo would be importing almost all its electricity.

The case of Kosovo B rehabilitation does represent one of the key factors for the security of supply in Kosovo. The rehabilitation will ensure reliable plant operations, increase its availability and extend its lifetime, while meeting all current environmental requirements.

The timing of the rehabilitation, however, needs to be selected in relation to the availability of other plants, in order to minimize the risk that the worst case scenario occurs, i.e. the situation where Kosovo A is decommissioned, NKPP is not built, and Kosovo B needs to go offline to undergo major overhauls or rehabilitation works, leaving Kosovo critically dependent on imports to meet demand.

8. Appendix 2 – Current Status and Structure of Kosovo B

Kosovo B Capabilities and Role in Kosovo Electricity System

The electricity generation in Kosovo is mainly provided by the KEK (Kosovo Energy Corporation), operating through the two lignite-fired plant Kosovo A ('Kosovo A') and Kosovo B, supplied by open cast coal mines (Sibovc Southwest and Sitnica +sectors). These two plants represent about 97% of the total installed capacity in Kosovo. The balance of Kosovo generation is provided by hydro power plants (Ujmani, Lumbardh, Radac, Dikanc and Burim) and other renewable sources of energy.

Generation unit	Capacity of Units (MW)			Set in operation
	Installed	Net	Min/max	
A1	65	Non-operational		1962
A2	125	Non-operational		1964
A3	200	182	100-130	1970
A4	200	182	100-130	1971
A5	210	187	100-135	1975
TPP Kosova A	800	551		
B1	339	310	180-260	1983
B2	339	310	180-260	1984
TPP Kososva B	678	620		
HPP Ujmani	35.00	32.00		1983
HPP Lumbardhi	8.80	8.00		1957 (2006)
HPP Dikanci	1.00	0.94		1957 (2010)
HPP Radavci	0.90	0.84		1934 (2010)
HPP Burimi	0.86	0.80		1948 (2011)
Total HPP	46.56	42.58		
Wind Power	1.35	1.35		2010
Total	1,525.91	1,214.93		

Table 6 – Installed Electricity Generation Capacities in Kosovo today

The two coal-fired power plants, Kosovo A and Kosovo B, have a combined 1,478 MW of total installed capacity, but due to their age and condition, their current operational capacity is around 915 MW. Kosovo's installed hydro capacities amount to around 46 MW.

In terms of energy output, Kosovo A and Kosovo B together produced a total gross electricity of 4,894 GWh in 2014, while installed hydro capacities generated 151 GWh in 2014.

The electricity sector in Kosovo is characterized by insufficient domestic production of electricity, unreliable supply and high technical and commercial losses. In spite of the increase of production in the recent years, domestic production is not sufficient to meet the growing consumption. Daily load

disconnection is still routine, meaning that the available production is not able to match the demand at specific periods.

Load disconnection is usually done in the hours when the demand cannot be covered by Kosovo generation capacities and imports, or less frequently due to limitations in the distribution network.

Unplanned interruptions are caused by the unexpected and unforeseeable defects, as well as due to the failure of generation units, transmission or distribution systems and exacerbate the underlying generation inadequacy situation.

Ownership Structure

The KEK (Kosovo Energy Corporation) was the incumbent electric utility company in Kosovo 100% owned by the Republic of Kosovo which KEK originally operated through 4 divisions:

1. distribution network;
2. supply;
3. coal mining; and
4. Electricity generation.

On the 17th November 2012 the Government of Kosovo signed the SPA with private company Kosovo Calik Limak Energy (KCLE) for KEK, distribution network and the supply division privatization. For the purpose of privatizing these KEK divisions, the government transferred the assets to another government entity, Kosovo Energy Supply and Distribution (KEDS), later acquired by a private consortium formed of the Turkish companies Çalik Holding and Limak following an international tender.

The full transfer was finalized on 8th May 2013.

Today, KEK is operating and is organized through 3 operating divisions

1. Coal Production;
2. TPP Kosovo A
3. TPP Kosovo B

With central management functions being centralized as shown below;

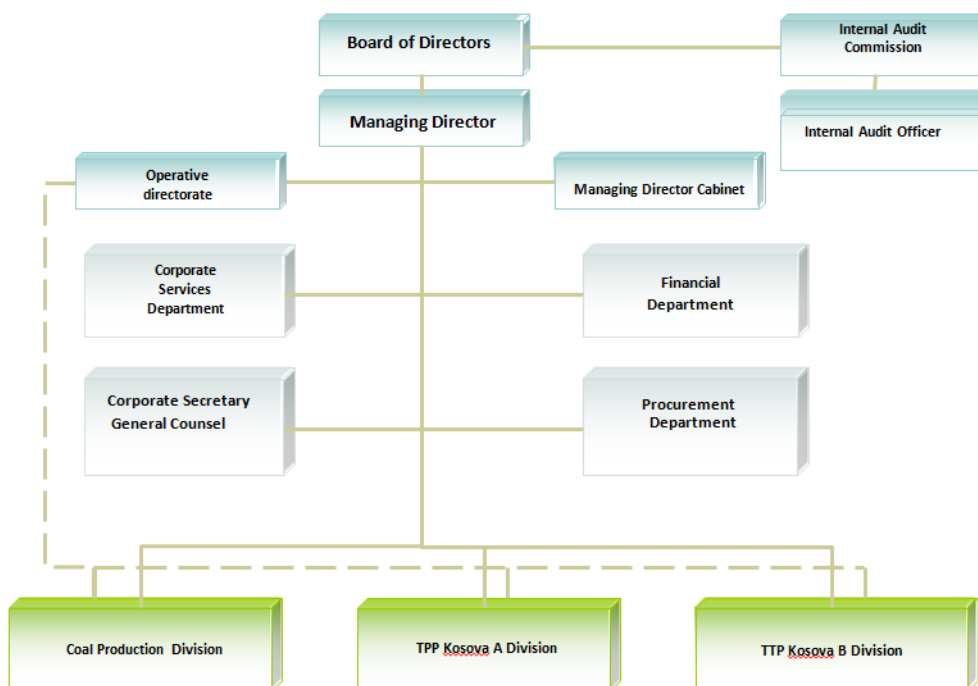


Figure 11 – KEK Organizational Scheme

Since KEK generates almost all electricity produced in Kosovo, it is considered to have a monopoly of the market, so Kosovo A and Kosovo B have a status of regulated generators, with ERO (Energy Regulatory Office) setting regulated tariffs.

Coal division

Kosovo has estimated 14 billion tons of geological reserves of lignite. Most of the reserves are found in the three largest basins: Kosovo (10 billion tons) and Dukagjini and Drenica (combined total of 2.5 billion tons).

Lignite mining began in 1922 with a small underground mine. Large-scale exploitation of lignite in the Kosovo Basin started in 1958 in the open cast mines of Mirash and in 1969 in Bardh, also open cast. Between 1922 and 2010 about 310 million tons of lignite were mined.

The Mirash and Bardh mines, which supplied Kosovo A and Kosovo B, were exhausted in 2010 and 2012, respectively.

Sibovc SW part of Sibovc field which is currently being exploited is one section of the Sibovc Field. The estimated coal amounts in this field are 123.4 mil. tons of coal. This mine will be exhausted by the end of 2024.

Sibovc mine will supply lignite to Kosovo A and Kosovo B. It is also planned to supply the proposed KRPP.

For KRPP the southern part of Sibovc Field is expected to be exploited.

A yearly average of the coal excavated is around 8 million tons of coal per year.

For the period 2010 until 2013 average specific lignite consumption for the Kosovo B was around 1.252 t/MWh, while for the Kosovo A was higher at around 1.711 t/MWh.

The average values of lignite quality parameters of the different mine areas are: Moisture content: vary between 35% and 50%. Ash contents: between 12% and 21% within the coal seam. The average values are around 14% to 17%. Heating values: 7800 kJ/kg on average in the Bardh-Mirash area, while 8100 kJ/kg in the Sibovc area. Sulfur: 1 % in all parts of the mines/deposit including an average content of combustible sulfur of 0,35 %. Lime concentration is sufficient to absorb significant amount of SOX during combustion so that desulfurization of flue gases is not required.

The cost of lignite is also regulated, based on the revenues, and is approved by the ERO. In the last three years the prices of lignite recognized amounted to 10.25 €/ton in 2013, 9.62 €/ton in 2014, and 10.10 €/ton in 2015.

The above price includes also a 3.0 €/ton royalty, which was approved by the Kosovo Assembly on the May 25, 2012 as a part of the Decision No. 04-V-380. Before the mentioned decision, the royalty amounted to 0.25 €/ton. All royalties are to be passed through to the Offtaker in the form of adjustments to the electricity tariffs and ultimately to the regulated tariffs charged to the customers. Under the current law, the lignite royalties are the only tax placed on mineral extraction under Kosovo legislation, and as such represent an economic rent to the Government of Kosovo.

As already mentioned, the Sibovc Southwest Mine is expected to be exhausted by the end of 2024. Therefore, there is an urgent need to develop a mining plan for the new field at the southern section of the Sibovc Field. The new Sibovc South Mine will supply both existing, as well as the future generation capacities. Given the fact that this field will be the only source of fuel beyond 2024, and in order to not risk the security of supply, its opening represents a stringent necessity for the country.

Generation divisions

The divisions for generation are composed of two business divisions, TPP Kosovo A Division and TPP Kosovo B Division that are based in the area of Kastriot about 8 km from Prishtinë, the Capital of the Republic of Kosovo.

Thermal Power Plant Kosovo A Division is responsible for operating five generation units known as A1, A2, A3, A4 and A5.

Due to its age, only units A3, A4 and A5 are still operating, but with two units supplying energy to the grid, with the third mostly providing spinning reserve. Units A1 and A2 are out of operation and will be decommissioned together with other units.

Kosovo A generates around 1700 GWh/year in average.

Power Plant Kosovo B Division is responsible for operating B1 and B2 generation units.

Kosovo B is the largest available generation facility in Kosovo, consisting of two equal larger units, B1 and B2, with total gross 678 MW, and net 620 MW installed capacity. The first unit B1 was commissioned in 1983 with a REPOWER-KOSOVO

generation capacity of 339 MW, and the second, B2 unit, in 1984 with a generation capacity of 339 MW.

The fuel used is locally mined lignite, delivered to the power plant by conveyor belts. The coal is stored in the coal yard and supplied as needed to each unit's day-use coal bunkers.

The electric power is generated at 24 kV and stepped up in the main power transformers of each unit to 400 kV level for the delivery to the Kosovo transmission grid.

Water for the plant is taken from Ujmani/Gazivode Lake, which is fed by the Iber/Ibar River and canal systems. All incoming water is pretreated in the DEKA plant by clarifiers and sand filters. The pretreated water is used as make-up for the cooling tower/circulating water system, for auxiliary equipment cooling, and with further treatment by the ion exchange demineralizer plant for cycle make-up.

Flue gases produced by the combustion of lignite in the steam generator are cleaned of particulates by electrostatic precipitators prior to discharge to the ambient environment via a 210 m tall stack. The ashes are slurred to the ash pond for disposal. Waste waters are collected in a pond near the shore of Sitnica River and discharged into the river.

All maintenance and most routine repairs are made by KEK's O&M staff. Only the very specialized repairs are contracted with external companies.

KEK thermal power plants are recognized as significant sources of air pollution, due to higher emissions from the power plants Kosovo A and B.

While for Kosovo B, although lower emission level is reported, there are also evident exceeding of emission limited values for dust, SO₂, NO_x and CO₂. Kosovo is a contracting party in the Energy Community Treaty (EnCT) of the South East Europe and as such it has to implement the acquis on the environmental issues, namely the Directive on Large Combustion plants, and also to be prepared for the implementation of the Directive on Industrial emissions respecting the decisions from 24 October 2013 of the Ministerial Council of Energy Community.

Kosovo B Investment Requirements

In 2010, the „Kosova B Investment Requirements and Rehabilitation Feasibility Study“ was prepared by Tetra Tech ENE in 2010 in order to determine the rehabilitation and modernization works needed to be done in order to extend the life of the plant.

In the study, it is stated that the extensive rehabilitation and modernization work in the amount of €354.800.000 was planned to be done for the period 2010 through 2024, of which €321.000.000 (€483/gross kW output) for the period 2015 through 2024, in order to keep them operating reliably through 2024 while in order to extend the life of the plant to 2040, the additional life extension work in the amount of €179.900.000 (€270,9/gross kW output) would be required for the period 2025 through 2040. Therefore, in the report it is stated that a total cost of €534.700.000 would be needed for the period 2010 through 2040.

Out of the total cost, about €187 million was planned for the environmental controls and their supporting systems.

If it is decided not to extend the life of the Kosovo B units until 2040, and to operate the units only until 2030, it is estimated that the investments between 2025 and 2030 would be €81 million (€122, 1/gross kW output).

Investments from 2010 to 2014

In the study, plan for the period 2010 through 2014 estimate investments of around €34m.

Actual investments on maintenance and overhauls were significantly higher at €45m. This, together with the increased coal production, resulted in an increased overall production of electrical energy.

Although significant amounts are spent for the investments in Kosovo B, with the total cost overruns of €11.329.000 against the plan created by Tetra Tech ENE in 2010, the planned rehabilitation and modernization works planned for the period 2009-2014 were not completed with, investments necessary for the improvements needed for the environmental compliance with the EU directives such as the FGD, SCR and ESP. The actual against the planned works is shown in the following table.

Description	Planned/ Actual	Unit	2009	2010	2011	2012	2013	2014
Steam generator & auxiliaries	Planned	B1		0	0	2.000	0	0
		B2		0	2.000	0	0	0
Steam generator & auxiliaries	Actual	B1		905	0	730	39	408
		B2	563	905	355	44	39	0
Steam turbine	Planned	B1		3.000	0	6.000	0	0
		B2		3.000	6.500	0	0	0
Steam turbine	Actual	B1	4.143	4.926	0	9.325	2.161	5.941
		B2	4.143	4.528	90	59	0	0
Electric generators & auxiliaries	Planned	B1&B2		0	2.000	0	0	0
Electric generators & auxiliaries	Actual	B1&B2	1.286		2.263	1.095		
Balance of TG plant mechan.	Planned	B1&B2		0	0	0	0	0
Balance of TG plant mechan.	Actual	B1&B2						
Environmental (FGD, SCR, ESP)	Planned	B1&B2		0	0	1.900	300	500
Environmental (FGD, SCR, ESP)	Actual	B1&B2				314		
Ash & sludge handling & dispos.	Planned	B1&B2		0	0	0	0	0
Ash & sludge handling & dispos.	Actual	B1&B2						
Lignite handling	Planned	B1&B2		0	0	0	0	0
Lignite handling	Actual	B1&B2			297			
Power transformers & breakers	Planned	B1&B2		3.000	0	0	0	0
Power transformers & breakers	Actual	B1&B2	109	899		150		363
Misc. electrical equipment	Planned	B1&B2		0	100	100	0	0
Misc. electrical equipment	Actual	B1&B2	484		504	419	561	
Misc. mechanical equipment	Planned	B1&B2		0	0	0	0	0
Misc. mechanical equipment	Actual	B1&B2	652	56		3.281	1.015	559
Instrumentation & controls	Planned	B1&B2		0	0	300	0	0
Instrumentation & controls	Actual	B1&B2						
Water treatment & chem. systems	Planned	B1&B2		3.000	0	0	0	0
Water treatment & chem. systems	Actual	B1&B2		1.298	58			391
Civil/structural works	Planned	B1&B2		100	0	0	0	0
Civil/structural works	Actual	B1&B2		201	296		520	134
Total Planned		33.800	0	12.100	10.600	10.300	300	500
Total Actual		56.509	11.380	13.717	3.863	15.417	4.336	7.796

Table 7 – Actual against Planned Investments in Kosovo B 2009-2014

Mostly due to the investments done, the annual production of Kosovo B has increased in the recent years, and reached the history highest Kosovo B gross production of 4.196 GWh in 2013, representing 65% of overall electricity generated in Kosovo.

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Production	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh
Kosovo B	2,617	3,244	2,972	3,016	3,254	3,252	3,195	3,140	3,378	3,812	3,310

Source: ERO Annual Report 2014

Table 8 – Kosovo B net electricity production 2004-2014

Current objective of Kosovo B staff is to maintain the level of production indicated in the last 2-3 years, which means to produce at the capacity of around 4.000 GWh of gross production per year with a +/-5% possible deviations, until the rehabilitation of both units is done.

Since the „Kosova B Investment Requirements and Rehabilitation Feasibility Study“ report was done 5 years ago, for the purposes of the future rehabilitation, updated studies, reports and due diligence will have to be done to verify the investment requirements.

A renewed Feasibility Study for Environmental and other measures on Kosovo B thermal plant to be financed by the EU is in the contracting phase. The report is a precondition for going forward with the rehabilitation of Kosovo B, and will need to include all possible solutions with all the details, the implementation plan, the structure of the plant operations, environmental measures in order to meet the standards set by the EU Directives etc. Associated costs of implementing environmental mitigation measures needs to be addressed by this or other feasibility studies, so that they can be budgeted and planned accordingly.

In order to successfully plan and bring the decisions about the realization and financing the rehabilitation, and in order to increase the confidence in the data provided, the report has to be done and signed by credible company.

All the data in this report are used from the study done in 2010, and need to be updated after the results of the new study.

9. Appendix 3 – Overview of Previous Recommendations

The following sets out an overview of the documents and the main recommendations of the reports done to date:

Title	Author	Date
Preparation of Scoping Statement for Environmental Assessment for Rehabilitation of Thermal Power Plant Kosovo B	Advanced Engineering Associates International, Inc. (AEAI)	Apr 2010
Kosovo B Investment Requirements and Rehabilitation Feasibility Study	Tetra Tech ENE	Aug 2010
Development and Evaluation of Power Supply Options for Kosovo	DHIInfrastructure	Dec 2011
Affordable Electricity for Kosovo	Sierra Club	Oct 2011
Kosovo Power Project Report of the SFDC External Expert Panel to the World Bank	János M. Beér Wladyslaw Mielczarski Derek M. Taylor	Jan 2012
Sustainable Energy Options for Kosovo	Renewable & Appropriate Energy Laboratory, Energy & Resources Group, University of California, Berkeley	May 2012
Environmental Assessment for Rehabilitation and Possible Life Extension of Thermal Power Plant Kosovo B	Advanced Engineering Associates International, Inc. (AEAI)	Dec 2012
Transaction Structuring Options for Kosovo B	Advanced Engineering Associates International, Inc. (AEAI)	Sep 2013
Study about Security of Supply in Kosovo	Vattenfall Europe PowerConsult GmbH	Mar 2013

April 2010 – Advanced Engineering Associates International, Inc. (AEAI) – Preparation of Scoping Statement for Environmental Assessment for Rehabilitation of Thermal Power Plant Kosovo B

The purpose of the document includes:

- Determination of the scope and significance of issues to be analyzed in a subsequent Environmental Assessment, including primary and secondary effects of the Kosovo B project on the environment,

- The identification and elimination of issues that are not significant or have been covered by earlier environmental review, or approved design considerations, narrowing the discussion of these issues to a brief presentation of why they will not have a significant effect on the environment.

In addition, the intent of the Scoping Statement was to inform and provide information about the range of issues that should be considered and evaluated in any World Bank (WB) required environmental and social impact assessment (ESIA) and associated environmental management plans that are to be prepared as part of the transaction process.

August 2010 – Tetra Tech ENE – Kosovo B Investment Requirements and Rehabilitation Feasibility Study

The Feasibility Study found that rehabilitation of Kosovo B in 2016-2017 is technically and economically feasible, and environmentally desirable, and that the privatization, or a public private partnership, would increase the efficiency and the investment attractiveness (it should be noted that the report is not specific on how privatization and/or a public private partnership would necessarily increase efficiency and investment attractiveness nor does the report address the issue of securing the requisite investment).

Main Findings:

The cost to rehabilitate and repair Kosovo B to keep it at high electric output and operating reliably from 2015 through 2024 is estimated at €321million, which represents about €483/kW. The cost of life extension to keep the plant operating from 2025 through 2040 is estimated at €179.9 million, which represents €270.9/kW. To extend the operating life from 2025 only to 2030 is estimated to cost €81.1 million, which represents about €122.1/kW.

December 2011 – DH Infrastructure – Development and Evaluation of Power Supply Options for Kosovo

This background paper was commissioned by the World Bank, since the Government of Kosovo has requested World Bank support, in the form of a partial risk guarantee (PRG), for a new, coal-fired independent power project (IPP), as one of many analytical inputs to the Expert Panel's deliberations. The paper consolidates analytical reports and models the projected use of the installed capacity of all power supply options for Kosovo to meet energy consumption and peak demand until 2025. The paper includes consideration of the environmental externalities associated with each option and reviews several combinations of energy alternatives for meeting daily and seasonal variations in demand.

World Bank support for coal-fired projects requires that full consideration to be given to other viable alternatives and their economic costs, as compared to the coal-fired alternative.

Main Findings:

The analysis reported in this study concludes that the power supply plan based on new lignite plant is the least cost thermal option for Kosovo.

October 2011 – Sierra Club – Affordable Electricity for Kosovo

The report provides a review of economic issues that have been provided to the Kosovo Strategic Framework for Development and Climate Change (“SFDCC”) Expert Panel to assist the panel in determining whether the proposed Kosovo Power Project meets World Bank policy on participation in coal-based power generation projects. It focuses on that part of the proposal that would provide for World Bank Group support for a new base load lignite-fired power plant (“Kosovo C”) and examines whether the TOR provides a sufficiently credible evaluation of available alternatives to provide a basis for World Bank Group participation in the Kosovo Power Project as proposed.

Main Findings:

The report concludes that the information provided in the TOR does not provide a basis for determining that the proposed NKPP project is in the county’s best interest, and state that not all the alternative options have been analyzed.

January 2012 – The expert panel – Kosovo Power Project Report of the SFDCC External Expert Panel to the World Bank

The expert panel organized by the World Bank in July 2011. The objective of the Panel was to (i) review the concept for the proposed Kosovo Power Project, and (ii) assess the compliance of the Kosovo Power Project with the six screening criteria of the SFDCC.

The Power Project concept includes: a) build-own-operate a new lignite-fired 2 X 300 MW power plant (known as "Kosovo e Re Power Plant - KRPP); b) rehabilitate-own (or lease)-operate the 2 X340 MW Kosovo B power plant (presently de-rated to 2 X 280 MW); and c) build-own-operate-transfer a new lignite mine called the Sibovc South Lignite Mine (also simply known as the "New Mine").

Main Findings:

It is the unanimous view of the Expert Panel finds that the project complies fully with the screening criteria developed in the SFDCC. However, the Panel did raise concerns over the need for increased effort to reduce energy demand and the technical and commercial losses related to electricity supply (in the context of Criterion 3), suggested modifications to the project specifically related to achieving the highest possible efficiency for the new plant (Criterion 5) and pointed to an urgent need to improve the environmental monitoring capabilities in the country and, in particular, around Pristina, the plants and the mine (Criterion 6). The report notes that the part of the project concerning the proposed rehabilitation and modernization of an existing power plant (Kosovo B), is not required to specifically comply with Criterion 2 and Criterion 5 as long as this rehabilitation results in a reduction in the relative intensity of GHG emissions.

A critical issue in the work of the Panel was the possibility of alternatives supply options for the supply of electricity in Kosovo over the next 10-15 years. These options have been studied by a number of organizations in recent years, most recently by DHInfrastructure for its background paper

"Development and Evaluation of Power Supply Options for Kosovo", which looked at the different costs for the potential options, including their environmental impact showing that renewable energies could make an important contribution to future electricity supply in Kosovo. However, even taking fully into account the renewable potential and expected improvements in both end-use efficiency and the presently very sizeable technical and commercial losses, there will still be a very important supply demand gap and need for base-load generation that could only be met by thermal power plants in the foreseeable future. The Panel is unanimous in agreeing that lignite-fired generation would be the most appropriate option to fill this gap. Furthermore, they agree that 2 X 300 MW units would be preferable to a single 600 MW unit.

May 2012 – Renewable & Appropriate Energy Laboratory, Energy & Resources Group, University of California, Berkeley – Sustainable Energy Options for Kosovo

The report opposing the construction of new lignite fired Power Plant stating that the business as usual path, dominated by an expanded use of low-quality coal, is not the least-cost energy option for Kosovo given the social cost of thermal generation.

Main Findings:

A coal dominant energy path burdens future generations with an energy mix that is neither environmentally sustainable nor is a path that maximizes job creation.

December 2012 – Advanced Engineering Associates International, Inc. (AEAI) – Environmental Assessment for Rehabilitation and Possible Life Extension of Thermal Power Plant Kosovo B

The rehabilitation of Kosovo B in 2016-2017 is included in a scenario that envisions continued operation of Kosovo A until 2017 at the latest and construction of one 2,100 MW generating unit at NKPP to replace Kosovo A and reduce imports. Closure of Kosovo A is expected to compensate for new emissions, while the NKPP will also be more efficient.

September 2013 – Advanced Engineering Associates International, Inc. (AEAI) – Transaction Structuring Options for Kosovo B

The paper tried to provide clarity to the MED regarding the nature of challenges hindering the effort and to identify alternatives available to the MED that would lead to the timely repowering and life extension of the Kosovo B power plant.

May 2013 – Vattenfall – Study about Security of Supply in Kosovo

The study determines, amongst other topics, that the optimum strategy of generation development in Kosovo confirms the planned construction of two new lignite units with a rated power of 300MW each and shows additionally the necessity of erecting two further lignite units with respectively 600MW. The two 600MW units would give the best opportunities concerning meeting

the demand, energy prices, export possibilities and effects on the Renewable Energy Sources and the economic development.

The construction of the proposed lignite units is not only a strategy regarding the development of Kosovo energy system, but also a basis for a successful cooperation with neighboring power systems and a successful position on the power markets. The geographical position of Kosovo, the energy demand development, the important huge lignite reserves and the very good integration into the 400-kV-system are objective advantages for power plant investors. It should also be noted that new lignite units are also required even if renewable energy sources such as wind and solar power are developed to provide the necessary standby power against, weather related fluctuations. Another source would be imported power from the Albanian hydro power plants.

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